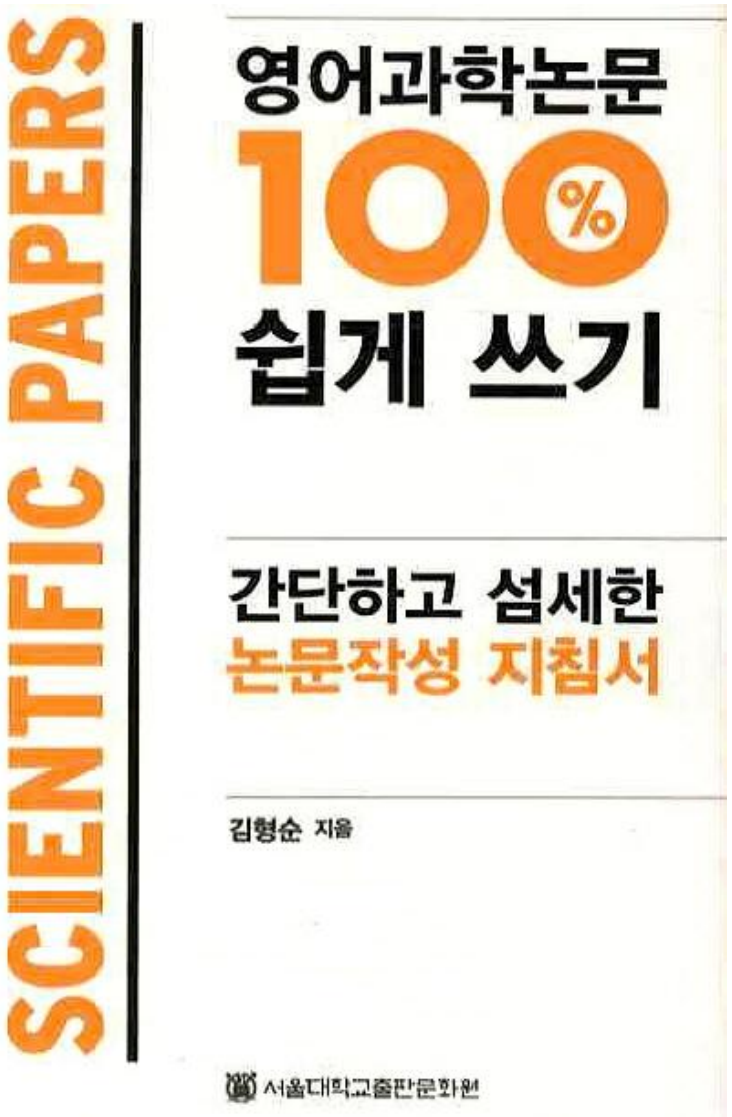
이공계 영어논문 작성법 I, II,
국제저널 논문투고 요령,
이공계 국제학회 프레젠테이션 방법

고려대학교 과학계산연구실

math.korea.ac.kr/~cfdkim

참고 도서



논문투고 요령과 논문심사 관련사항, 저자의 자격과 책임, 의무, 출판과정의 윤리측면에서 표절, 중복게재와 이중게재 등을 명료하게 소개한다.

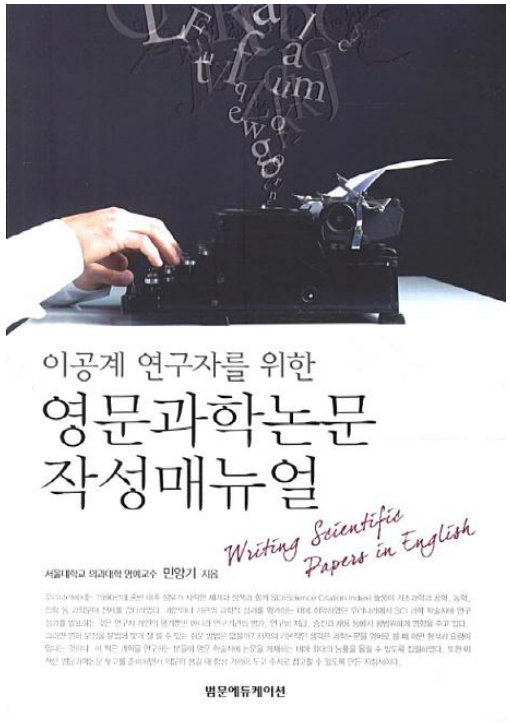
제1장 논문 정의
1.1 논문의 필요성, **1.2** 논문의 종류
1.3 논문의 구성과 형식, **1.4** 논문의 평가

제2장 논문작성
2.1 제목, **2.2** 초록, **2.3** 서론, **2.4** 연구방법
2.5 결과, **2.6** 고찰토의
2.7 결론
2.8 감사의 글, 후기
2.9 참고문헌
2.10 저자
2.11 그림과 표

제3장 논문교정과 출판과정
3.1 논문교정
3.2 논문 투고와 출판윤리
3.3 논문심사

참고문헌
찾아보기

참고 도서



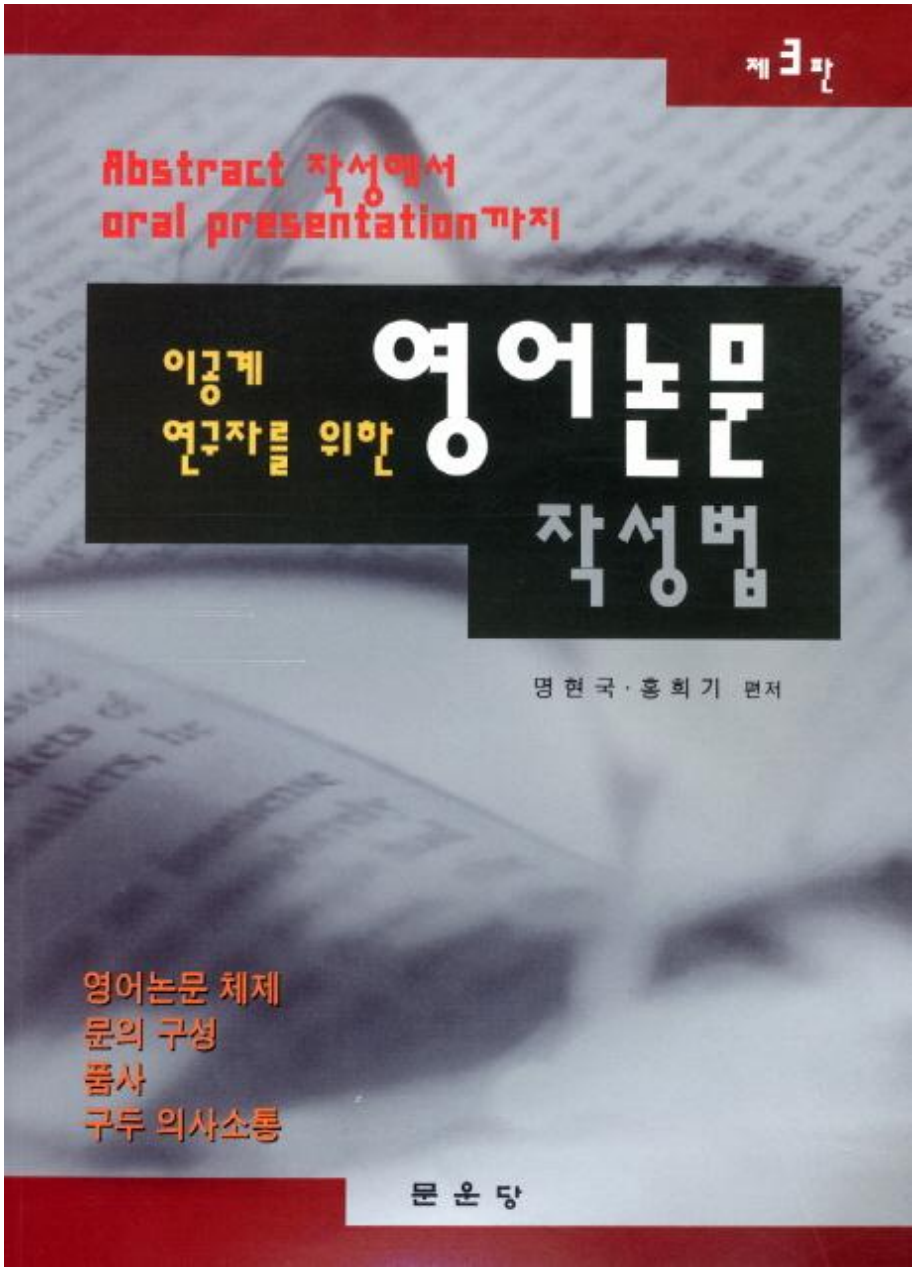
1부 과학논문 작성에 관한 개요
1 과학논문이란 무엇인가?, 2 과학논문 원고(manuscript)의 형식
3 과학논문 원고의 준비와 작성

2부 영문 과학논문을 학술지 투고규정에 따라 작성하는 방법
1 투고편지(covering letter, cover letter, submission letter)쓰기
2 제목 페이지(title page)와 논문제목 만들기
3 초록(abstract) 쓰기, 4 서론(introduction)부분
5 연구재료(materials) 및 연구방법(methods)부분
6 연구결과(results)부분, 7 고찰(discussion)부분
8 결론(conclusion)·요약(summary) 부분
9 감사의 글(acknowledgments)부분
10 참고문헌(references)부분
11 표(table)와 도해(figure) 작성법

3부 영어문장을 문법에 맞게 쓰기
1 영문과학 논문작성에 필요한 영문법 정리
2 영작문에 필요한 단어와 동의어
3 미국영어와 영국영어의 차이, 4 영문 교정, 5 영작문 훈련

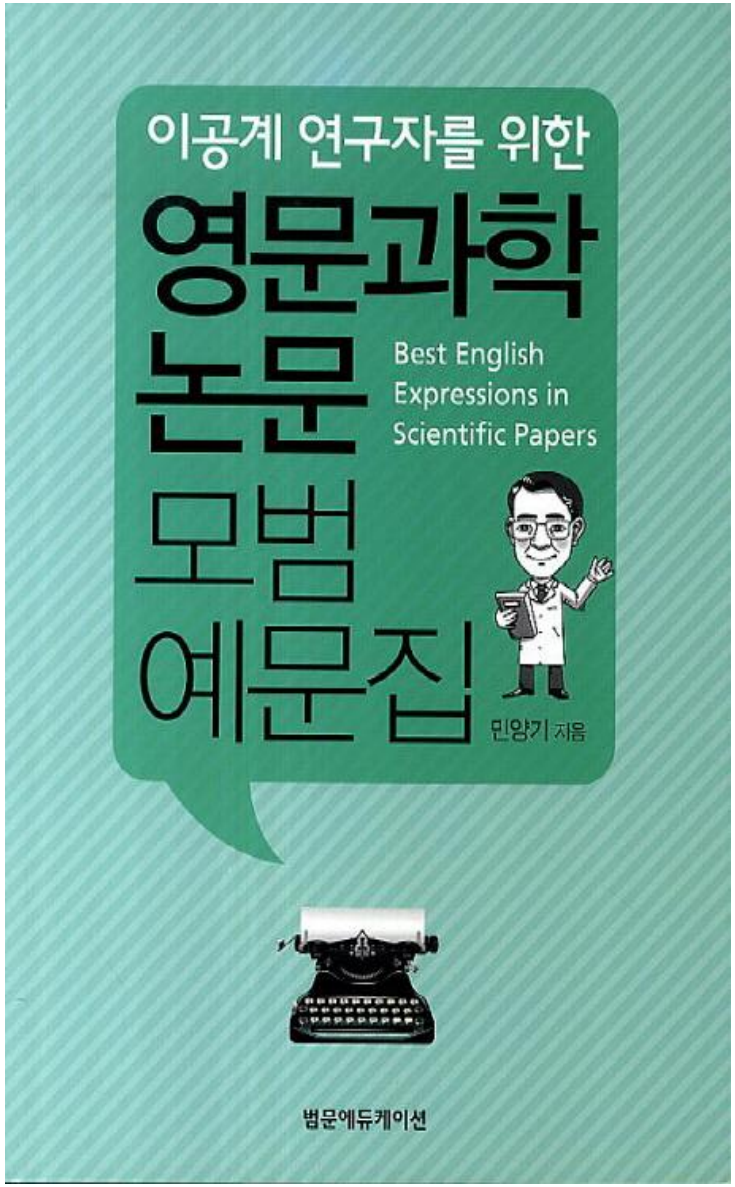
4부 논문 심사
1 논문 심사
2 심사위원의 심사평(reviewers' comments)에 대한 답신 작성 요령

참고 도서



목차

참고 도서



『이공계 연구자를 위한 영문과학논문 모범 예문집』은 화학, 물리학, 천문학, 동물학 등을 전공하는 이공계 연구자들이 영어 논문을 작성하는 데 도움이 되는 내용을 담고 있다.

저명한 이공계 과학 학술지에 나와 있는 자주 쓰는 영문 표현들을 참고하고 토대로 삼아, 우리 실정에 알맞게 수집하여 활용할 수 있도록 배려하였다. [교보문고]

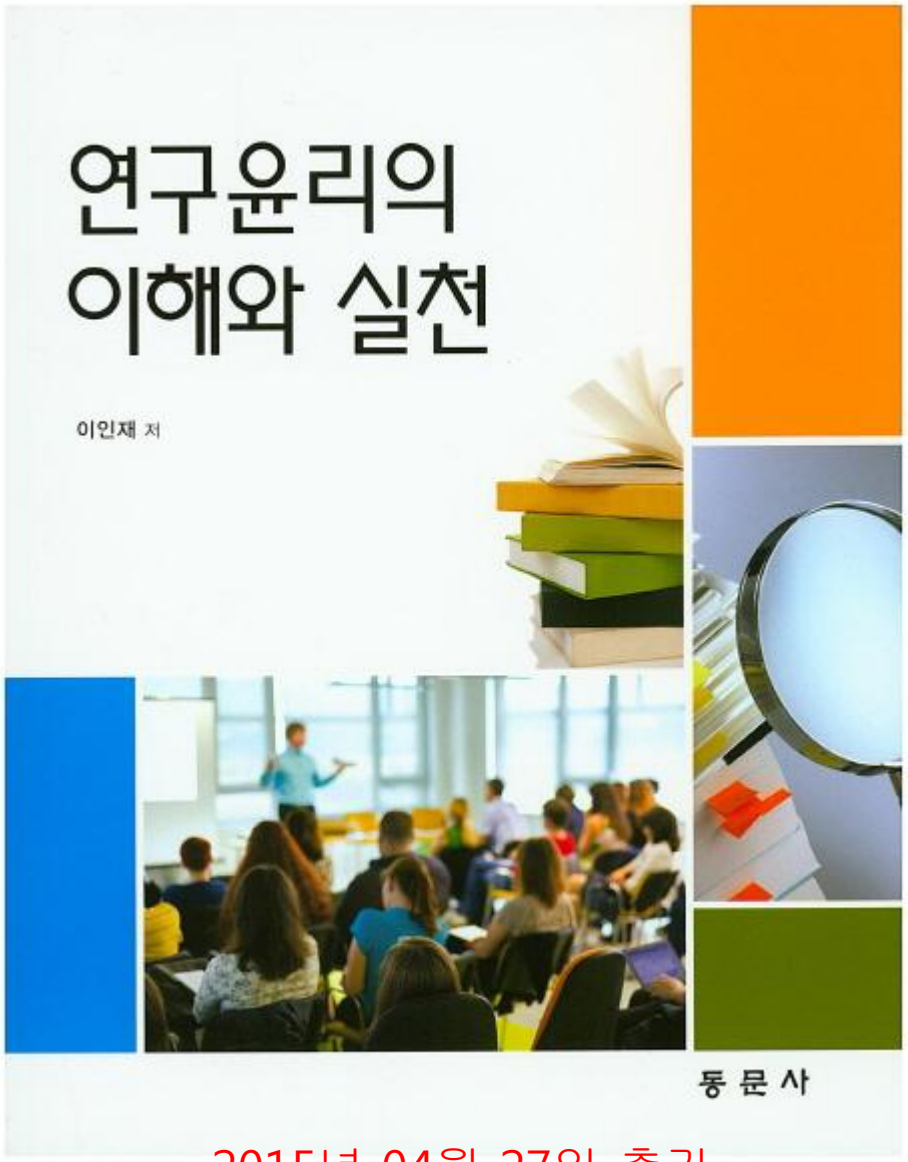
본문은 `가나다' 순서로 배열하였고 `영한 찾아보기'에서는 `알파벳' 순서로 배열하였다.

.....

보정
약간 보정할 필요가 있다.

명 correction
It is necessary to make a few corrections.

연구윤리



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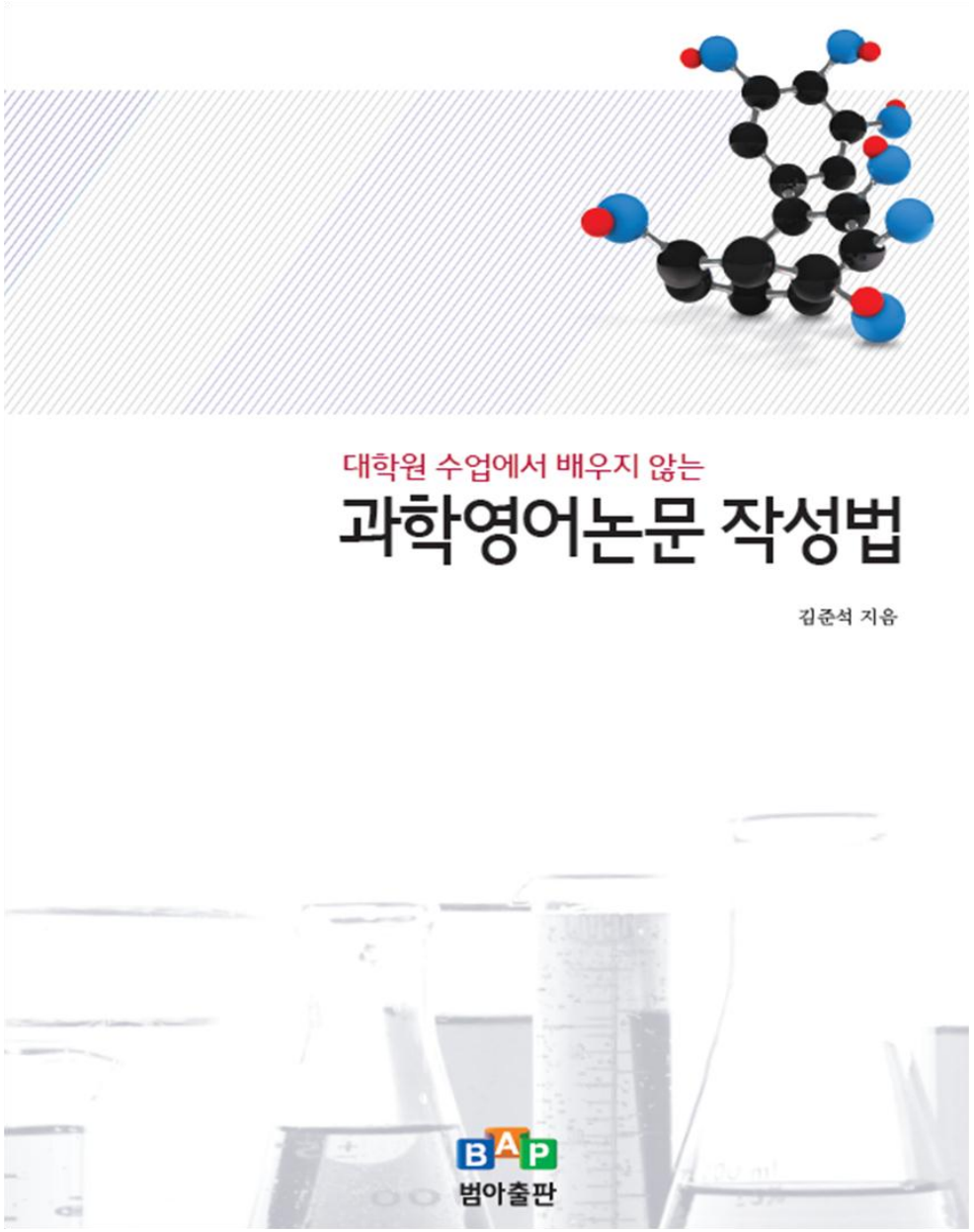

참고 인터넷 사이트

- 하이브레인넷 (http://www.hibrain.net)
- Google scholar (http://scholar.google.com)

대경대학교 교수 초빙
2015.07.06 ~ 2015.07.17

2015 출연연구기관 해외공동리크루팅
7.16 ~ 24(영국소재대학,EKC)/7.29 ~ 8.7(UKC,미서부대학)

국회예산정책처
임기제공무원 채용(5급 2인, 6급 1인)
2015.07.13 ~ 2015.07.15

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2015.07.01 ~ 2015.07.15

성신여자대학교 교수 초빙
교수:15.07.08~07.14 / 외국인교원:~15.07.17

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전자의료기술연구본부장(개방형직위) 공개 모집
2015.06.29 ~ 2015.07.09

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2015.07.09 ~ 2015.07.13

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2015.06.23 ~ 2015.07.10

KRIBB 한국생명공학연구원
핵심연구분야 우수인력/이공계 인턴십 채용 [2차]
2015.06.18 ~ 2015.07.06

한국농수산대학 교수 및 시간강사 초빙
교수:07.02~07.03 / 시간강사:06.29~07.01

2015.06.23~ 07.14

FAU독일국립대 FAU부산캠퍼스
화학생명공학부 대학원생 모집
2015.04.01~ 07.15

테마카페

- 교수의 길
- 연구원의 길
- 교수의 방
- 강사의 방
- 임용상담실
- 대학원진학상담실
- 해외유학상담실
- 진로상담실

지식카페

- 논문토론실
- 학술토론실
- 강의자료교환실

KAIST 문화기술대학원 교수 초빙
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2015.06.22~07.03

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2015.07.01~07.15

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2015.06.29~07.13

포항대학교 교수 초빙
2015.06.26~07.10

고려대학교 교수 초빙
2015.06.26~07.13

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2015.06.30~07.20

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2015.07.01~07.09

계명대학교 비전임(초빙)교원 초빙
2015.06.26~07.08

나사렛대학교 교수 초빙
2015.06.25~07.10

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2015.06.29~07.07

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- 조지아대 한인학생회 NEW
- UW메디슨 한인학생회 NEW
- UTA 한인학생회 NEW
- 미네소타대 한인학생회 NEW
- 텍사스 A&M 유학생회 NEW
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논문토론실

제목: 논문 그림 인용

종류	질문	등록자	기어	첨부	

회원여러분 안녕하세요

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- 투고료(심사료), 게재료
- 투고료(심사료, 게재료)

- 학회회원(공동저자 포함)이 아닌 경우에는 논문 게재료를 기존 게재료의 2배를 납부하는곳도 있다.

논문토론실

제목: **Elsevier journal은 open access fee를 꼭 내야 하나요?**

종류	의견	등록자	rose2	첨부	

논문을 투고하려고 하는데 submission fee 가 없는 논문을 찾고 있습니다.

Elsevier 논문들이 투고료가 없다고 들었는데 잘 읽어보니

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"Journal offers you the option of making your article freely available to all via the ScienceDirect platform"

필수선택사항은 아니고 optional 이긴한데...

만약 fee를 안내면 Web site에서 볼수 없다는 뜻인가요?

경험있으신분 알려주세요.

과연 어떤 journal이 최소한의 비용으로 투고 할수 있나요?

Open Access

- Open access journal 중에 page charges 를 하는 저널도 있고 안 하는 저널도 있다.

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제목: Open access fee	0987	첨부	

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저자명과 논문 제목과 간단한 목차와 정리는
인터넷에서 바로 검색 가능합니다.

관심있는 사람이라면
자기가 소속된 학교나 연구소 계정으로
Elsevier에 접속하여 논문을 보게 되는 것입니다.

당연 투고 비용은 없습니다.
출판 비용도 물론 없습니다.

논문토론실

총 : 3943건 | 종류 | 검색 | 전체답변보기 | 목록 | 이전 | 다음

제목: **open-access article란?**

종류	질문	등록자	U너에게만U	첨부	

논문을 accept 후 open access에 대한 물음에 OK했습니다.

그리고 논문이 publish되었는데, 다른 research article 들은 그런 표시가 없는데, 제 논문에만 open-access article란 footnote가 적혀있네요.

다들 의례 하는 체크인줄 알았는데, 제논문만 있어 의아합니다.

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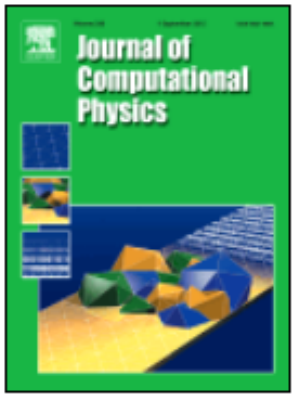
라고 적혀있는데, 추후에 별다른 문제는 없는것이겠죠?

아시는분 있으면 답변 부탁드립니다.



Journal of Computational Physics

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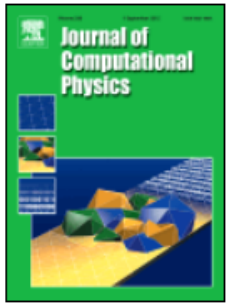

Journal of Computational Physics

TVD differencing on three-dimensional unstructured meshes with monotonicity-preserving correction of mesh skewness Original Research Article — Open Access
Volume 298, 1 October 2015, Pages 466-479
Fabian Denner, Berend G.M. van Wachem
Abstract | PDF (833 K)

Whole cell tracking through the optimal control of geometric evolution laws Original Research Article — Open Access
Volume 297, 15 September 2015, Pages 495-514
Konstantinos N. Blazakis, Anotida Madzvamuse, Constantino Carlos Reyes-Aldasoro, Vanessa Styles, Chandrasekhar Venkataraman
Abstract | PDF (2494 K)

Boundary element based multiresolution shape optimisation in electrostatics Original Research Article — Open Access
Volume 297, 15 September 2015, Pages 584-598
Kosala Bandara, Fehmi Cirak, Günther Of, Olaf Steinbach, Jan Zapletal
Abstract | PDF (2282 K)

An exact general remeshing scheme applied to physically conservative voxelization Original Research Article — Open Access
Volume 297, 15 September 2015, Pages 340-356
Devon Powell, Tom Abel
Abstract | PDF (3506 K)

Numerically accurate computation of the conditional trajectories of the topological invariants in turbulent flows Original Research Article — Open Access
Volume 295, 15 August 2015, Pages 805-814
Adrián Lozano-Durán, Markus Holzner, Javier Jiménez
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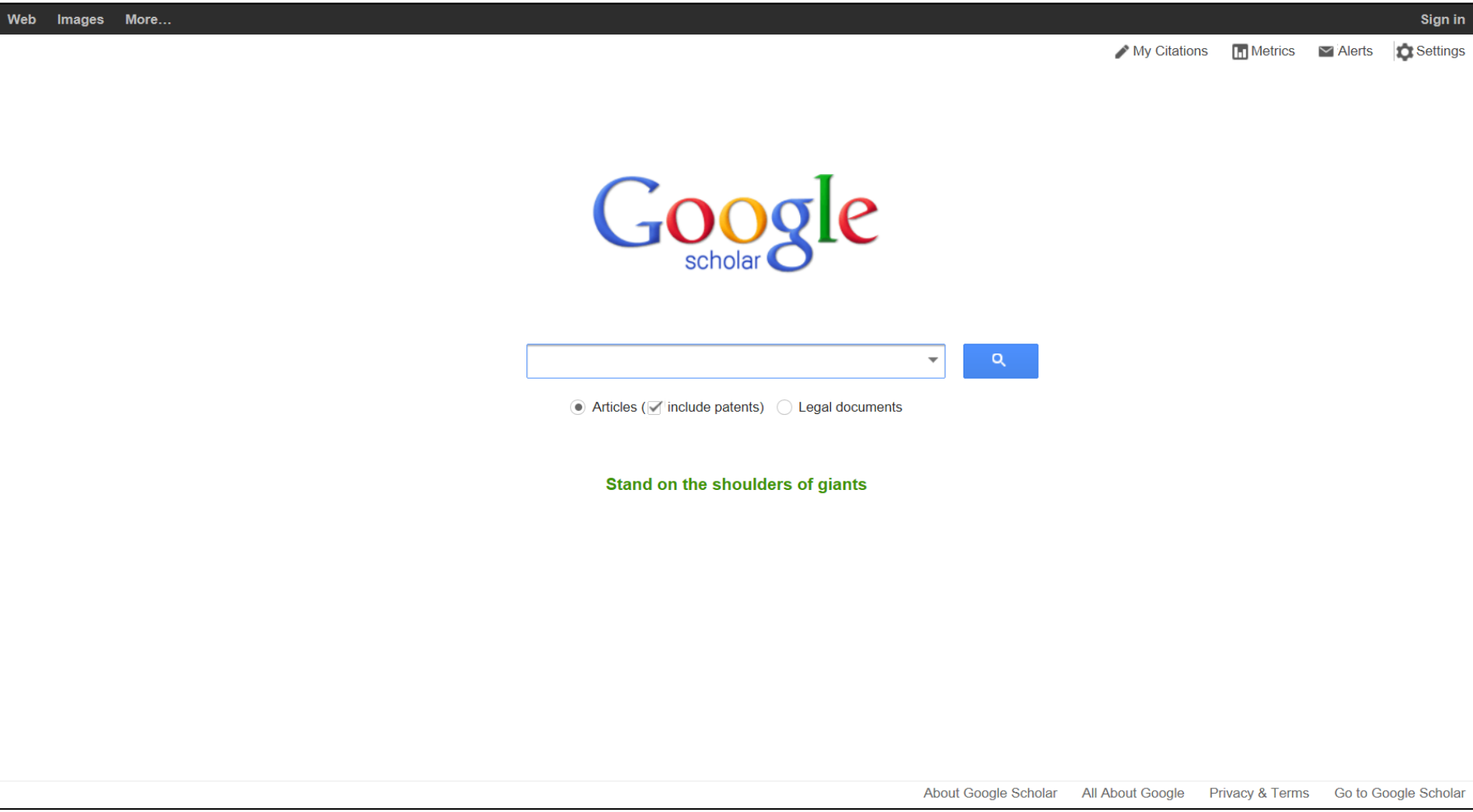

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ABSTRACT.-In this paper we extend the Van der Waals-**Cahn-Hilliard** theory of phase transitions to the case of a mixture of n non-interacting **fluids**. By describing the state of the mixture as given by a vector density function u=(Ul'..., un), the problem consists in studying ...

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We develop a conservative, second-order accurate fully implicit discretization of the Navier–Stokes (NS) and **Cahn–Hilliard** (CH) system that has an associated discrete energy functional. This system provides a diffuse-interface description of binary **fluid** flows with ...

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JW **Cahn**, JE **Hilliard** - The Journal of chemical physics, 1959 - scitation.aip.org

By finding the saddle point in the expression derived in Paper I (see reference 8) for the free energy of a nonuniform system, we have derived the properties of a critical nucleus in a two-component metastable **fluid**. At very low supersaturations, we find that the properties of the ...

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MLA Kim, Junseok, Kyungkeun Kang, and John Lowengrub. "Conservative multigrid methods for Cahn–Hilliard fluids." *Journal of Computational Physics* 193.2 (2004): 511-543.

APA Kim, J., Kang, K., & Lowengrub, J. (2004). Conservative multigrid methods for Cahn–Hilliard fluids. *Journal of Computational Physics*, *193*(2), 511-543.

ISO 690 KIM, Junseok; KANG, Kyungkeun; LOWENGRUB, John. Conservative multigrid methods for Cahn–Hilliard fluids. *Journal of Computational Physics*, 2004, 193.2: 511-543.

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[인용] Becoming children of God: John's gospel and radical discipleship
W Howard-Brook - 1994 - Orbis Books
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Peer-to-peer information systems: concepts and models, state-of-the-art, and future systems
K Aberer, M Hauswirth - ACM SIGSOFT Software Engineering Notes, 2001 - dl.acm.org
Page 1. Peer-to-peer information systems: concepts and models, state-of-the-art, and future systems Karl Aberer Department of Communication Systems Swiss Federal Institute of Technology (EPFL) 1015 Lausanne, Switzerland karl.aberer@epfl.ch ...
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Distributed interference management in two-tier CDMA femtocell networks
DT Ngo, LB Le, T Le-Ngoc, E Hossain... - ... , IEEE Transactions on, 2012 - ieeexplore.ieee.org
Page 1. IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS, VOL. 11, NO. 3, MARCH 2012 979 Distributed Interference Management in Two-Tier CDMA Femtocell Networks Duy Trong Ngo, Student Member, IEEE, Long ...
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Explaining delusions: a cognitive perspective
V Bell, PW Halligan, HD Ellis - Trends in cognitive sciences, 2006 - Elsevier
... agent". Guilt, "I am responsible for the AIDS epidemic". Religious, "I am the reincarnation of Solomon". Cotard delusion, "I am dead/do not exist," or "My body is decaying". Lycanthropy, "**I am/have** transformed into an animal". Full-size ...
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[인용] Kinetic theory of liquids
IAl Frenkel' - 1955 - Dover Publications
5094회 인용 관련 학술자료 인용 저장

[인용] The system of freedom of expression
TI Emerson - 1970 - Random House Trade
2463회 인용 관련 학술자료 인용 저장

The I-thou theme, contemporary psychotherapy, and psychodrama
M Buber - Pastoral Psychology, 1958 - Springer
... DR. BUBER comments . . . I thank you for sending me the two statements. With the history of the "dialogical principle" in the two last centuries **I have** dealt at some length in the postscript to Die Schriften iiber Das Didogische Prinzip (Heidelberg, 1954). ...
5686회 인용 관련 학술자료 전체 7개의 버전 인용 저장

[책] Unified Modeling Language Reference Manual, The
J Rumbaugh, I Jacobson, G Booch - 2004 - dl.acm.org
... **I have** been involved with the UML specification process for some time, but I still found myself learning things while reading through this book-especially on the changes and new capabilities that have come with UML." ï¾ ï¾ ï¾ ï¾ ï¾ ï¾ ï¾ ï¾ ï¾ ï¾ -Ed Seidewitz, Chief Architect ...
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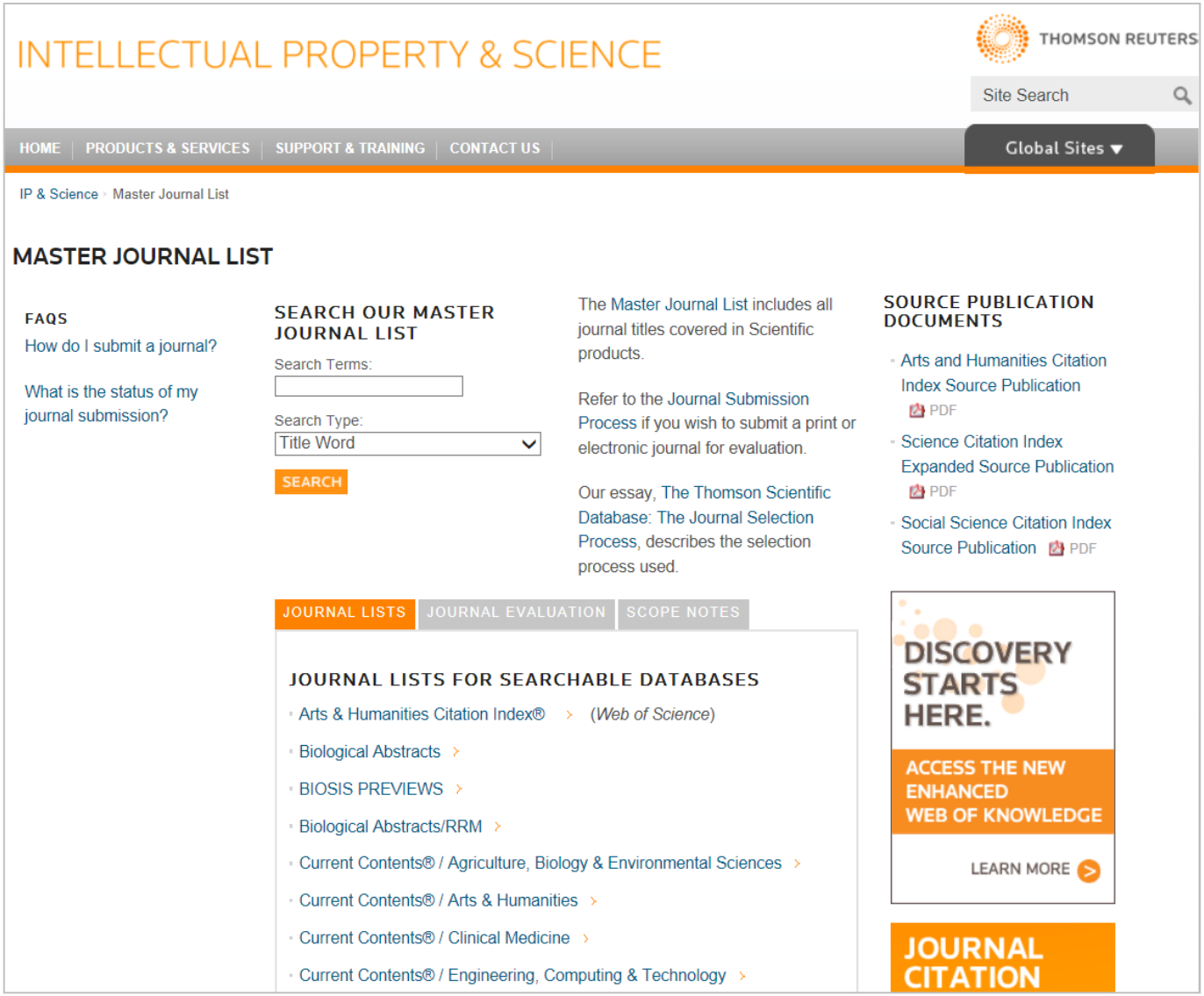

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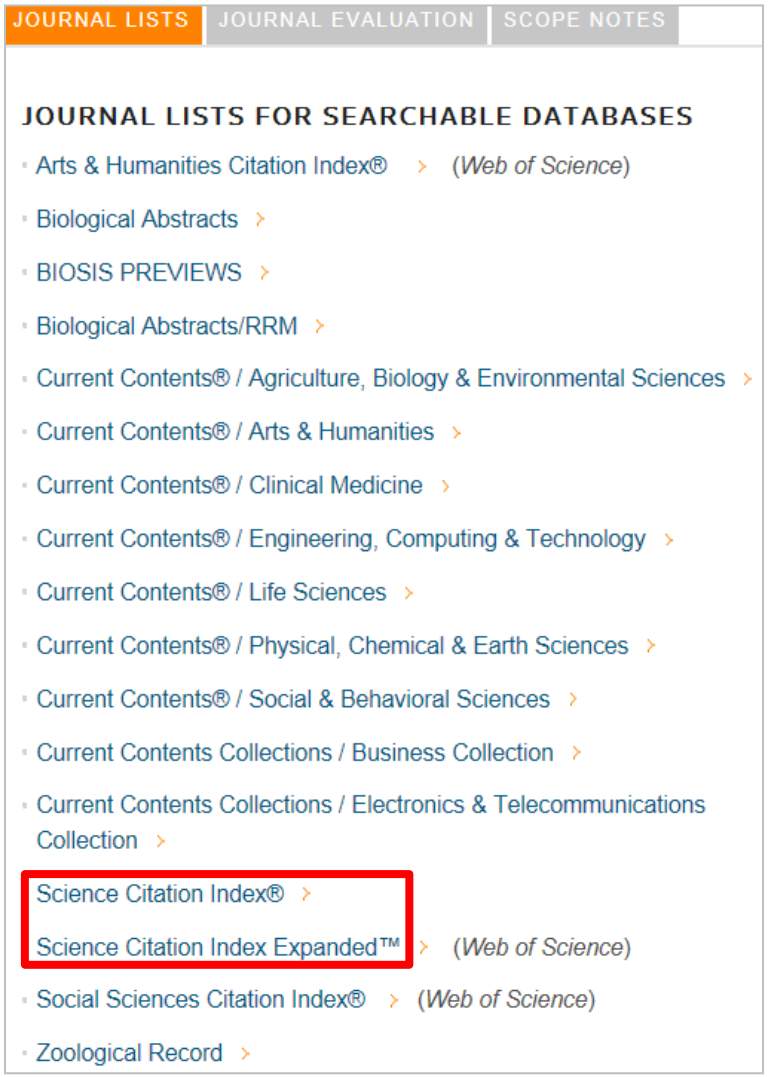

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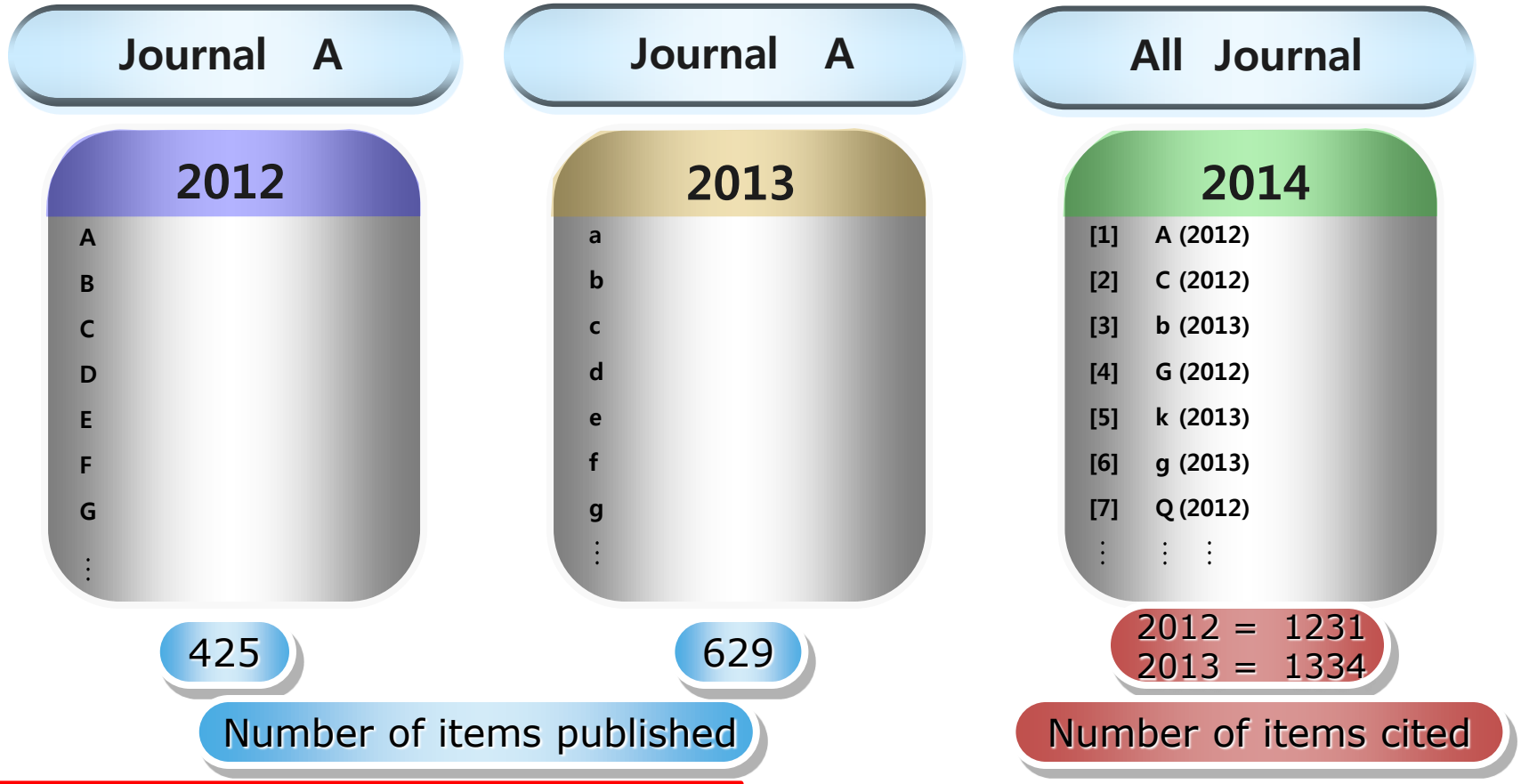

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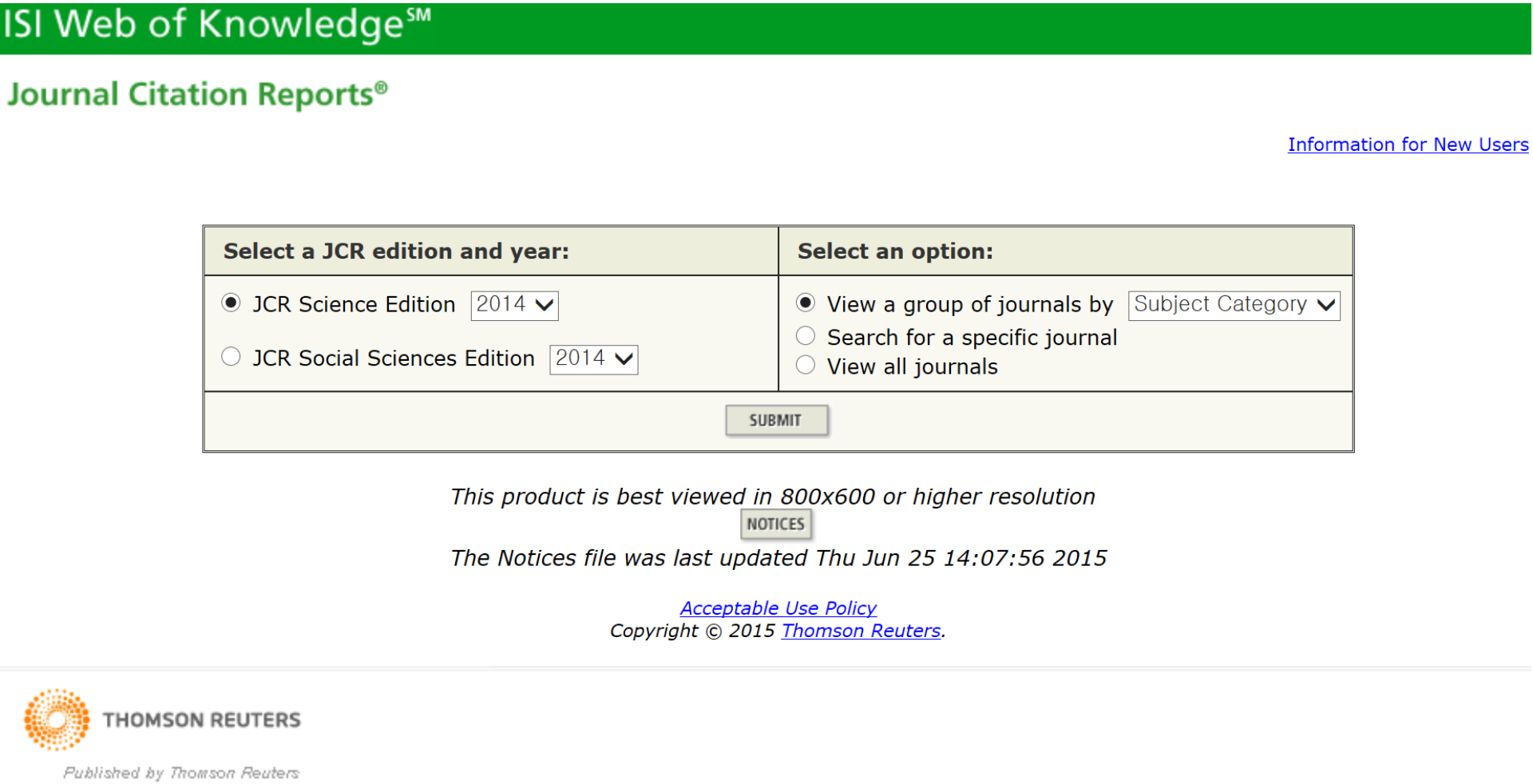

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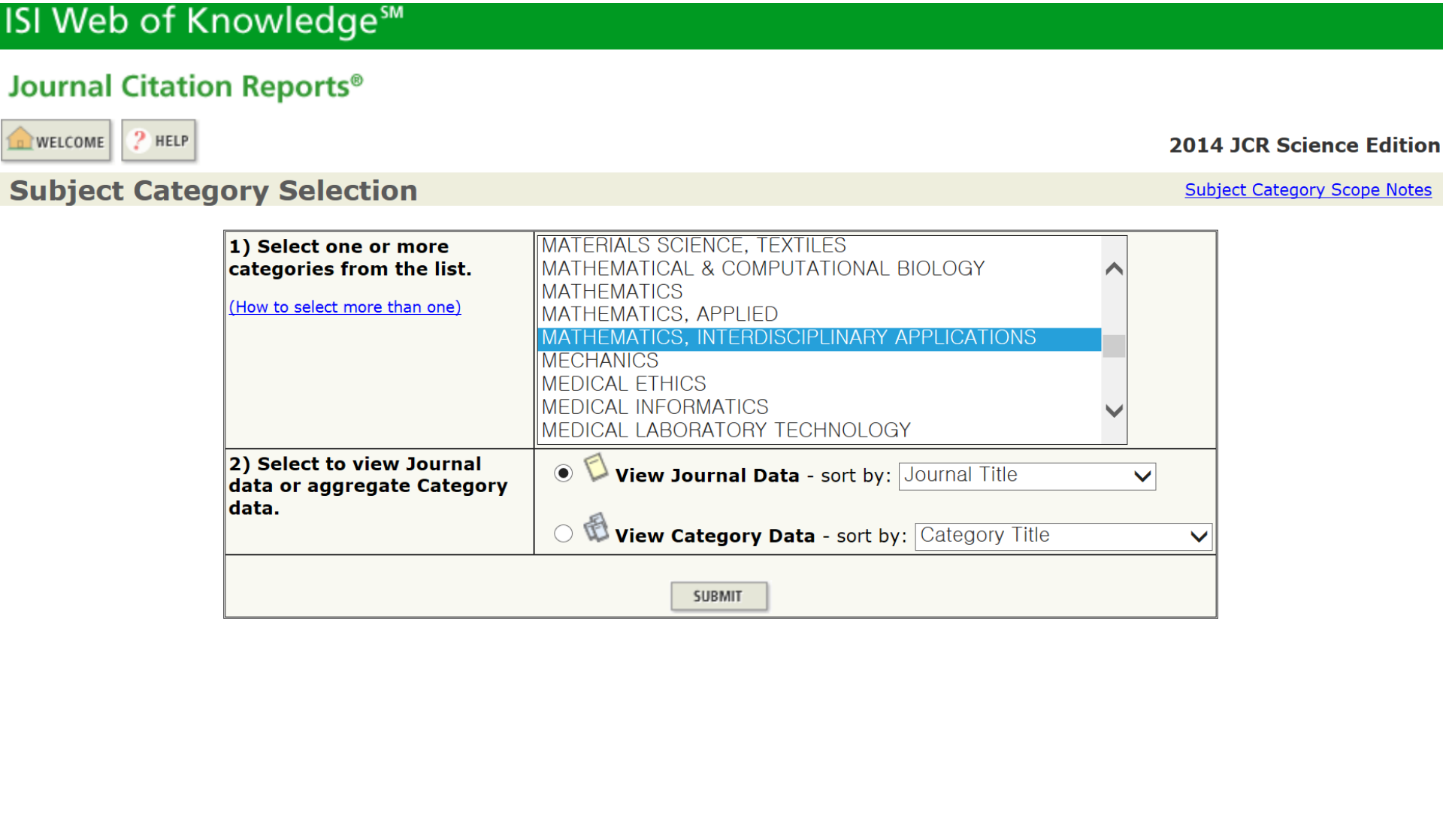

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☐	3	APPL MATH MODEL	0307-904X	7636	2.251	2.326	0.419	458	3.6	0.02545	0.654
☐	4	APPL STOCH MODEL BUS	1524-1904	411	0.725	0.811	0.055	55	6.6	0.00161	0.445
☐	5	ARCH COMPUT METHOD E	1134-3060	798	3.680	5.485	0.286	14	6.4	0.00306	2.913
☐	6	ARCH HIST EXACT SCI	0003-9519	237	0.455	0.528	0.105	19	>10.0	0.00039	0.279
☐	7	ARCH RATION MECH AN	0003-9527	6721	2.219	2.575	0.454	108	>10.0	0.02480	2.918
☐	8	ASTIN BULL	0515-0361	515	0.738	0.993	0.043	23	>10.0	0.00152	0.697
☐	9	B STOR SCI MAT	0392-4432	10	0.000	0.100	0.000	4		0.00000	0.000
☐	10	BAYESIAN ANAL	1931-6690	841	1.343	2.443	0.108	37	6.8	0.00513	2.038
☐	11	BRIT J MATH STAT PSY	0007-1102	1250	2.167	1.954	0.192	26	>10.0	0.00363	1.500
☐	12	CELEST MECH DYN ASTR	0923-2958	2202	1.600	1.644	0.359	64	>10.0	0.00371	0.685
☐	13	CHAOS SOLITON FRACT	0960-0779	7734	1.448	1.251	0.346	136	7.9	0.00967	0.351
☐	14	CHEMOMETR INTELL LAB	0169-7439	6189	2.321	2.770	0.459	183	>10.0	0.00756	0.724
☐	15	CMC-COMPUT MATER CON	1546-2218	374	0.964	0.798	0.167	48	3.7	0.00159	0.281
☐	16	CMES-COMP MODEL ENG	1526-1492	1518	1.030	0.987	0.324	102	5.3	0.00454	0.329

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☐	2	ANNU REV STAT APPL	2326-8298	16			0.727	22		0.00000	
☐	3	APPL MATH MODEL	0307-904X	7636	2.251	2.326	0.419	458	3.6	0.02545	0.654
☐	4	APPL STOCH MODEL BUS	1524-1904	411	0.725	0.811	0.055	55	6.6	0.00161	0.445
☐	5	ARCH COMPUT METHOD E	1134-3060	798	3.680	5.485	0.286	14	6.4	0.00306	2.913
☐	6	ARCH HIST EXACT SCI	0003-9519	237	0.455	0.528	0.105	19	>10.0	0.00039	0.279
☐	7	ARCH RATION MECH AN	0003-9527	6721	2.219	2.575	0.454	108	>10.0	0.02480	2.918
☐	8	ASTIN BULL	0515-0361	515	0.738	0.993	0.043	23	>10.0	0.00152	0.697
☐	9	B STOR SCI MAT	0392-4432	10	0.000	0.100	0.000	4		0.00000	0.000
☐	10	BAYESIAN ANAL	1931-6690	841	1.343	2.443	0.108	37	6.8	0.00513	2.038
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☐	12	CELEST MECH DYN ASTR	0923-2958	2202	1.600	1.644	0.359	64	>10.0	0.00371	0.685
☐	13	CHAOS SOLITON FRACT	0960-0779	7734	1.448	1.251	0.346	136	7.9	0.00967	0.351
☐	14	CHEMOMETR INTELL LAB	0169-7439	6189	2.321	2.770	0.459	183	>10.0	0.00756	0.724
☐	15	CMC-COMPUT MATER CON	1546-2218	374	0.964	0.798	0.167	48	3.7	0.00159	0.281
☐	16	CMES-COMP MODEL ENG	1526-1492	1518	1.030	0.987	0.324	102	5.3	0.00454	0.329

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☐	2	ECONOMETRICA	0012-9682	24175	3.889	5.758	1.197	66	>10.0	0.05494	10.855
☐	3	ARCH COMPUT METHOD E	1134-3060	798	3.680	5.485	0.286	14	6.4	0.00306	2.913
☐	4	COMPUT METHOD APPL M	0045-7825	18357	2.959	3.395	0.669	290	>10.0	0.03320	1.639
☐	5	STAT INTERFACE	1938-7989	466	2.933	1.755	0.000	48	2.1	0.00392	1.057
☐	6	COMMUN NONLINEAR SCI	1007-5704	7144	2.866	2.879	0.857	364	3.7	0.02439	0.732
☐	7	J MATH PSYCHOL	0022-2496	1915	2.609	2.656	0.367	30	>10.0	0.00382	1.232
☐	8	COMPUT MECH	0178-7675	4400	2.525	2.631	0.552	181	7.7	0.00946	1.030
☐	9	RISK ANAL	0272-4332	5918	2.502	2.539	0.274	146	9.4	0.01132	1.002
☐	10	MULTIVAR BEHAV RES	0027-3171	3905	2.477	4.084	0.316	38	>10.0	0.00714	2.688
☐	11	J FRANKLIN I	0016-0032	3029	2.395	2.422	0.458	310	4.2	0.00653	0.541
☐	12	CHEMOMETR INTELL LAB	0169-7439	6189	2.321	2.770	0.459	183	>10.0	0.00756	0.724
☐	13	APPL MATH MODEL	0307-904X	7636	2.251	2.326	0.419	458	3.6	0.02545	0.654
☐	14	FRACT CALC APPL ANAL	1311-0454	698	2.245		0.431	65	4.7	0.00162	
☐	15	ARCH RATION MECH AN	0003-9527	6721	2.219	2.575	0.454	108	>10.0	0.02480	2.918
☐	16	BRIT J MATH STAT PSY	0007-1102	1250	2.167	1.954	0.192	26	>10.0	0.00363	1.500

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☐	16	CMES-COMP MODEL ENG	1526-1492	1518	1.030	0.907	0.324	102	5.3	0.00454	0.329

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☐	5	COMPUT METHOD APPL M	0045-7825	18357	2.959	3.395	0.669	290	>10.0	0.03320	1.639
☐	6	COMMUN NONLINEAR SCI	1007-5704	7144	2.866	2.879	0.857	364	3.7	0.02439	0.732
☐	7	CHEMOMETR INTELL LAB	0169-7439	6189	2.321	2.770	0.459	183	>10.0	0.00756	0.724
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☐	10	J MATH PSYCHOL	0022-2496	1915	2.609	2.656	0.367	30	>10.0	0.00382	1.232
☐	11	COMPUT MECH	0178-7675	4400	2.525	2.631	0.552	181	7.7	0.00946	1.030
☐	12	ARCH RATION MECH AN	0003-9527	6721	2.219	2.575	0.454	108	>10.0	0.02480	2.918
☐	13	RISK ANAL	0272-4332	5918	2.502	2.539	0.274	146	9.4	0.01132	1.002
☐	14	BAYESIAN ANAL	1931-6690	841	1.343	2.443	0.108	37	6.8	0.00513	2.038
☐	15	J FRANKLIN I	0016-0032	3029	2.395	2.422	0.458	310	4.2	0.00653	0.541
☐	16	MULTISCALE MODEL SIM	1540-3459	1903	1.632	2.371	0.179	67	7.2	0.00756	1.638

Energy-Efficient Scheduling and Power Allocation in Downlink OFDMA Networks With Base Station Coordination

4
Author(s)

Venturino, L. ; Zappone, A. ; Risi, C. ; Buzzi, S.

This paper addresses the problem of energy-efficient resource allocation in the downlink of a cellular orthogonal frequency division multiple access system. Three definitions of energy efficiency are considered for system design, accounting for both the radiated and the circuit power. User scheduling and power allocation are optimized across a cluster of coordinated base stations with a constraint on the maximum transmit power (either per subcarrier or per base station). The asymptotic noise-limited regime is discussed as a special case. Results show that the maximization of the energy efficiency is approximately equivalent to the maximization of the spectral efficiency for small values of the maximum transmit power, while there is a wide range of values of the maximum transmit power for which a moderate reduction of the data rate provides large savings in terms of dissipated energy. In addition, the performance gap among the considered resource allocation strategies is reduced as the out-of-cluster interference increases.

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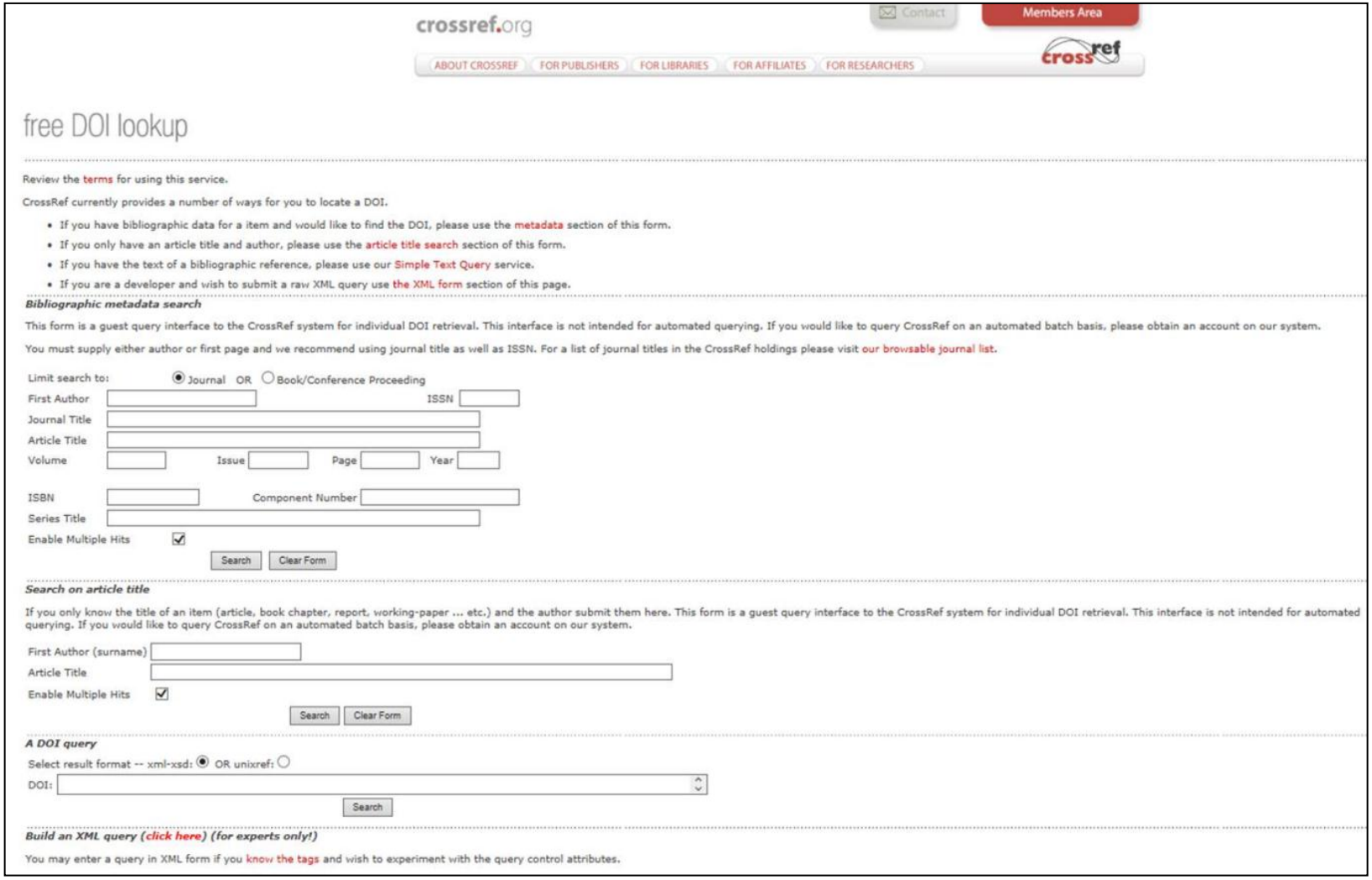

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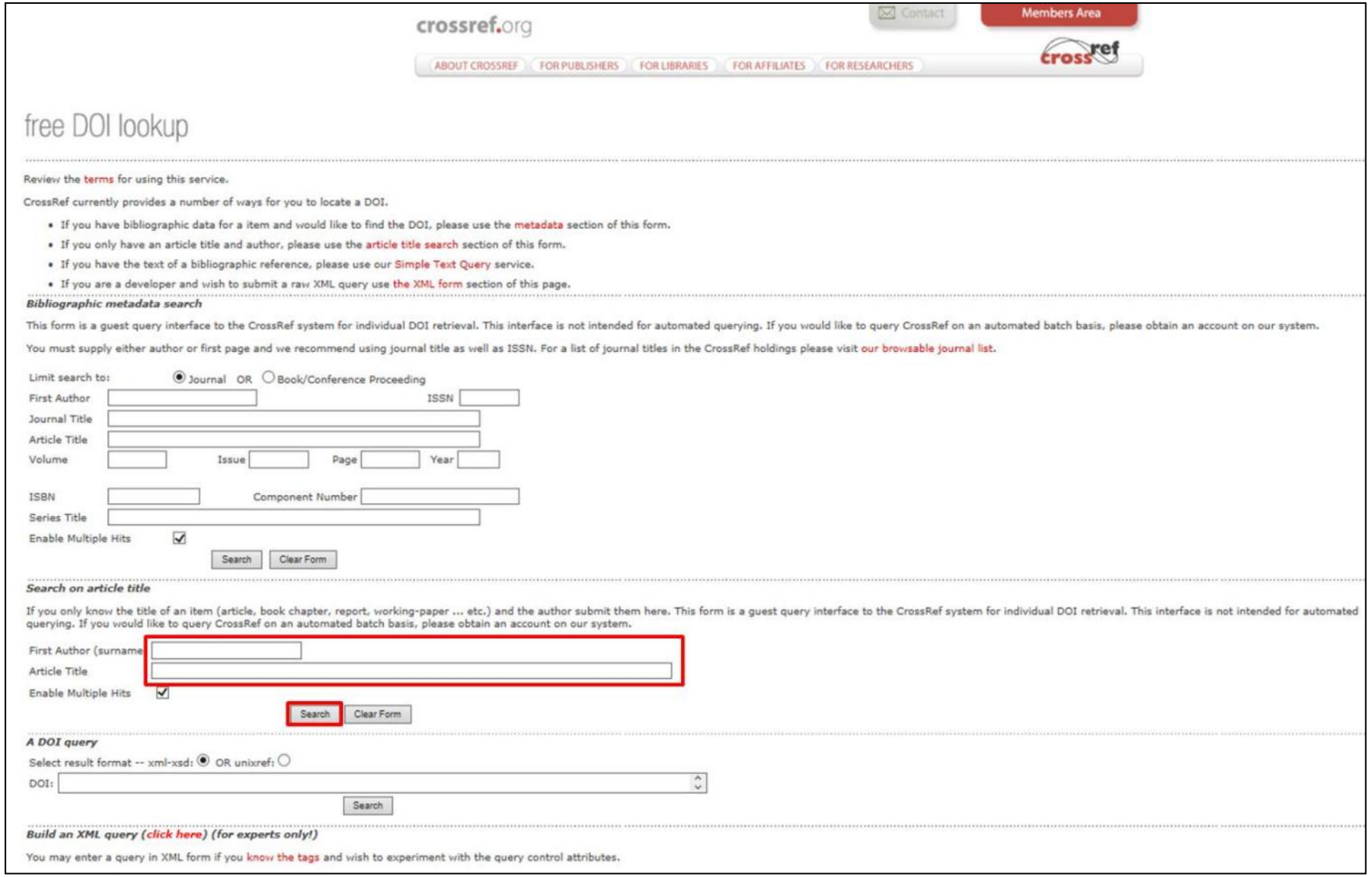

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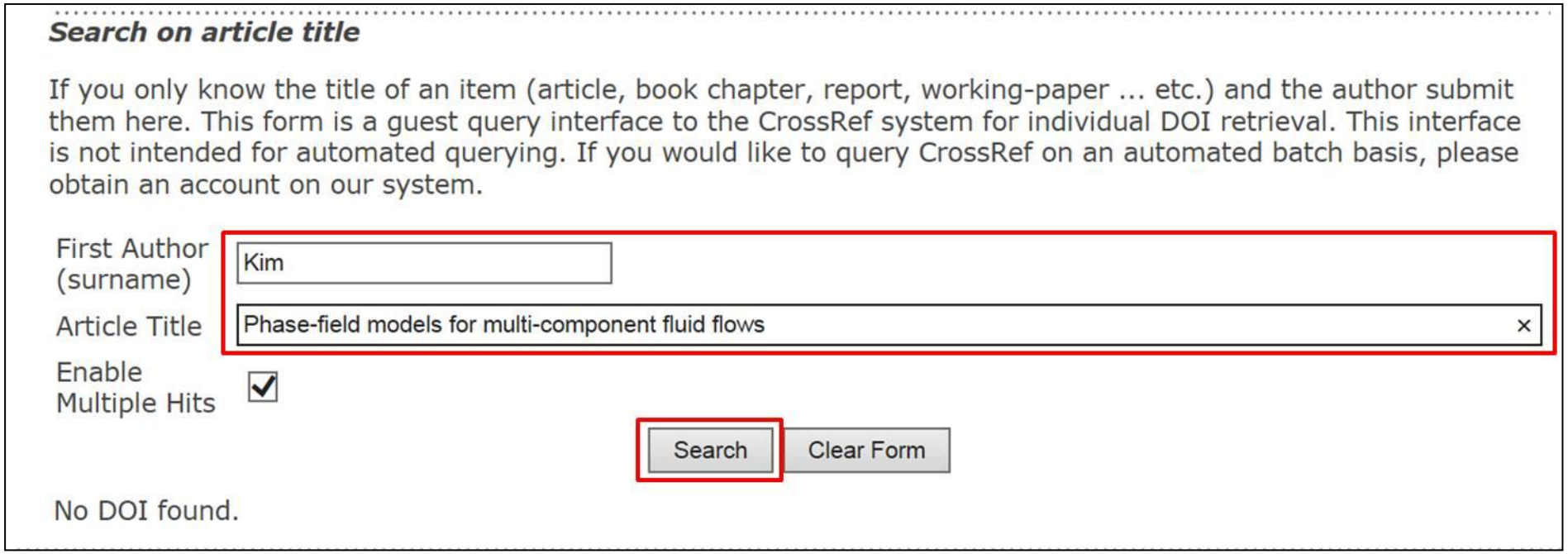

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Phase-Field Models for Multi-Component Fluid Flows						

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Commun. Comput. Phys., 12 (2012), pp. 613-661.

Phase-Field Models for Multi-Component Fluid Flows

Junseok Kim [1*]

1 *Department of Mathematics, Korea University, Seoul 136-701, Republic of Korea.*

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Available online 1 March 2012
doi:10.4208/cicp.301110.040811a

Abstract

In this paper, we review the recent development of phase-field models and their numerical methods for multi-component fluid flows with interfacial phenomena. The models consist of a Navier-Stokes system coupled with a multi-component Cahn-Hilliard system through a phase-field dependent surface tension force, variable density and viscosity, and the advection term. The classical infinitely thin boundary of separation between two immiscible fluids is replaced by a transition region of a small but finite width, across which the composition of the mixture changes continuously. A constant level set of the phase-field is used to capture the interface between two immiscible fluids. Phase-field methods are capable of computing topological changes such as splitting and merging, and thus have been applied successfully to multi-component fluid flows involving large interface deformations. Practical applications are provided to illustrate the usefulness of using a phase-field method. Computational results of various experiments show the accuracy and effectiveness of phase-field models.

AMS subject classifications: 76D05, 76D45, 76T30, 82C26
Key words: Navier-Stokes, Cahn-Hilliard, multi-component, surface tension, interface dynamics, interface capturing, phase-field model.

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왜 국제 논문에서 영어를 잘 사용해야 하나?
외국인 시선에서 본 한국인의 영어표현

14년 전 서울대 생명과학인력양성사업단에 계약직 연구교수가 있었다. 성과가 변변치 못하면 언제라도 짐을 싸야 하는 상황이었다. 그럼에도 그는 2억원이나 개인 빚까지 내서 장비를 갖췄다. 자신의 연구에 대한 믿음이 없었다면 버티기 힘든 날들이었다. 이제 그는 논문을 발표할 때마다 세계의 이목을 집중시키고, 한 해 100억원까지 연구비를 쓸 수 있는 세계적 생명과학자로 우뚝 섰다. 한국의 '퀴리 부인'으로 불리는 김빛내리(46) 기초과학연구원(IBS) RNA연구단장 겸 서울대 생명과학부 교수다.

14 years ago there was a contract research professor at Seoul National University Life Sciences manpower corporation. If the results were meager at any situation in which to pack luggage. Nevertheless, he has some of the equipment take up to 200 million won or personal debt. Without the belief in their own research prop was a hard days. Now, whenever he presented a paper to focus the attention of the world, he stood towering up to 10 billion won a year in the world of life scientists to write a grant. South Korea called the 'Marie Curie' Kim bitnaeri (46) Basic Science Institute (IBS) RNA research is President and Director of Biological Sciences at Seoul National University.

14년 전 서울 대학교 생명 과학 인력 회사에서 계약 연구 교수가 있었다. 결과가 어떤 상황에서 빈약 있다면 있는 여행용 가방을 포장한다. 그럼에도 불구하고, 그는 장비의 일부는 200,000,000원 또는 개인 빚까지 걸릴 수 있습니다. 자신의 연구 소품에 대한 믿음이 없으면 힘든 일이었다. 그는 세계의 관심을 집중하는 논문을 발표 할 때마다 지금, 그는 10 억 보조금을 작성하는 생명 과학자의 세계에서 연간 원까지 솟아 서 있었다. 한국은 RNA 연구는 서울 대학교에서 생물학의 사장 겸 감독 인 '마리 퀴리'김 bitnaeri (46) 기초 과학 연구원 (IBS)라고 합니다.

출처/발췌 : “우리도 科學으로 인류에 기여하는 나라 돼야죠” 조선일보(2015.05.29)

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- 제목이 너무 긴 경우

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✉ 알림 만들기

도움말: **한국어** 검색결과만 보기. 학술 검색 설정에서 검색 언어를 선택할 수 있습니다.

Conservative multigrid methods for **ternary Cahn-Hilliard** systems [PDF] (출처: projecteuclid.org)
J Kim, K Kang, J Lowengrub - Communications in Mathematical ..., 2004 - projecteuclid.org
Abstract We develop a conservative, second order accurate fully implicit discretization of **ternary** (three-phase) **Cahn-Hilliard** (CH) systems that has an associated discrete energy functional. This is an extension of our work for two-phase systems. We analyze and prove ...
61회 인용 관련 학술자료 전체 6개의 버전 인용 저장

Numerical simulation of phase separation in Fe-Cr binary and Fe-Cr-Mo **ternary** alloys with use of the **Cahn-Hilliard** equation
M Honjo, Y Saito - ISIJ international, 2000 - cat.inist.fr
Résumé/Abstract The **Cahn-Hilliard** nonlinear diffusion equation for a binary alloy system was extended to a **ternary** system. Numerical model based on the **Cahn-Hilliard** equation for multicomponent system was applied to the prediction of microstructural evolutions in Fe- ...
52회 인용 관련 학술자료 전체 3개의 버전 인용 저장 더보기

A numerical method for the **ternary Cahn–Hilliard** system with a degenerate mobility [PDF] (출처: 165.132.10.17)
J Kim, K Kang - Applied Numerical Mathematics, 2009 - Elsevier
We applied a second-order conservative nonlinear multigrid method for the **ternary Cahn–Hilliard** system with a concentration dependent degenerate mobility for a model for phase separation in a **ternary** mixture. First, we used a standard finite difference approximation ...
14회 인용 관련 학술자료 전체 6개의 버전 인용 저장

Conservative multigrid methods for **Cahn–Hilliard** fluids [PDF] (출처: uci.edu)
J Kim, K Kang, J Lowengrub - Journal of Computational Physics, 2004 - Elsevier
... Recent applications of **Cahn–Hilliard** fluid modeling include simulations of the two- and three-dimensional Rayleigh–Taylor instability (eg [5], [7] and ... This alternative approximation also allows us to extend systematically the discrete system to the case of **ternary** mixtures [3]; the ...
170회 인용 관련 학술자료 전체 21개의 버전 인용 저장

Multimaterial structural topology optimization with a generalized **Cahn–Hilliard** model of

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ternary Cahn Hilliard

학술검색

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The numerical solution of **Cahn–Hilliard** (CH) equation in one, two and three-dimensions via globally radial basis functions (GRBFs) and RBFs-differential quadrature …
M Dehghan, V Mohammadi - Engineering Analysis with Boundary …, 2015 - Elsevier
... The CH equation was originally proposed by **Cahn** and **Hilliard** to model **...** Some applications of the CH equation are pointed in [53] such as the phase separation of binary and **ternary** liquid mixture [1] and [70], multi-phase fluid flows [9], [57], [54] and [55], Taylor flow in mini **...**
인용 저장

Phase-field modelling of spinodal decomposition in TiAlN including the effect of metal vacancies
K Grönhagen, J Ågren, M Odén - Scripta Materialia, 2015 - Elsevier
... In this model, (TiAlVa)N is approximated as a pseudo-**ternary** system consisting of Al:N, Ti:N and Va:N where the composition of N is supposed to be homogeneous throughout the system, ie we present a **Cahn–Hilliard** model [25] that is expanded to a substitutionally **ternary ...**
인용 저장

[PDF] The Dynamics of Nucleation in **Cahn-Hilliard**-Cook Systems
M Namazi - math.gmu.edu
... Similar research has been done on **ternary** alloys [1]. Our interest is in looking at the effect of periodic and Neumann boundary conditions on … The **Cahn Hilliard** Cook stochastic PDE, which

Google "ternary Cahn Hilliard"

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관련도별 정렬
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전체 웹문서
한국어 웹

☑ 특허 포함
☑ 서지정보 포함

✉ 알림 만들기

도움말: **한국어** 검색결과만 보기. 학술 검색 설정.에서 검색 언어를 선택할 수 있습니다.

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61회 인용 관련 학술자료 전체 6개의 버전 인용 저장

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14회 인용 관련 학술자료 전체 6개의 버전 인용 저장

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170회 인용 관련 학술자료 전체 21개의 버전 인용 저장

Multimaterial structural topology optimization with a generalized Cahn–Hilliard model of multiphase transition
S Zhou, MY Wang - Structural and Multidisciplinary Optimization, 2007 - Springer
... Kim (2002) and Kim et al. (2004a,b). The nonlinear multigrid method is an implicit solver for binary and **ternary Cahn–Hilliard** systems in the absence of elastic strain en- ergy. The discrete scheme inherits mass conservation ...
68회 인용 관련 학술자료 전체 3개의 버전 인용 저장

Local discontinuous Galerkin methods for the Cahn–Hilliard type equations
Y Xia, Y Xu, CW Shu - Journal of Computational Physics, 2007 - Elsevier
In this paper, we develop local discontinuous Galerkin (LDG) methods for the fourth order nonlinear Cahn–Hilliard equation and system. The energy stability of.

1. 형식

- 대문자·소문자의 원칙은 투고하려는 저널의 형식을 준수한다.

2. Subtitle

- Finite element methods for Navier-Stokes equations: theory and algorithm

3. Running title

- 논문의 각 페이지에 title의 짧은 version

4. 최종점검

- 논문을 다 작성한 후, 마지막으로 다시 한 번 Title이 이 논문이 무엇에 관한 것인지, 정확하게 나타내고 있는지를 검토하고 필요하면 더 좋은 Title로 수정한다.

5. 예

- On the convergence of discrete approximations to the Navier-Stokes equations

- On the time-dependent solution of the incompressible Navier-Stokes equations in two and three dimensions

- A multiphase level set framework for image segmentation using the Mumford and Shah model

6. 저자 이름 및 소속 표기

- 저자 이름 표기하기

① 영문이름 표기는 투고하는 모든 논문에 일관성 있게 적용한다.

- 공동연구의 경우 저자명 순서

① 우선 저널의 규정을 따른다.

② 알파벳순으로 하는 경우 Last name순으로.

③ 교신저자 또는 책임저자와 상의 후 결정.

- 소속 표기

① 투고할 저널의 형식을 따른다.

Department of Mathematics, Korea University, Seoul 136-713, Republic of Korea

7. Keywords, Index Terms

- 논문의 주제와 주된 아이디어를 반영하는 단어들을 나열한다.
- 독자의 문헌검색에서 본인의 논문이 관련논문으로 검색이 될 수 있도록 keywords 선택에 신중한다.
- 저널에 따라서 keywords 사이를 세미콜론 혹은 콤마로 구분한다.

Abstract

Abstract는 전체논문의 간결한 요약으로 다른 연구자들이 abstract를 보고 전체 논문을 읽을지를 결정할 수 있다.

Abstract에 포함되어야 하는 내용

1. 이 연구의 주된 목적과 연구 범위 기술
2. 연구의 목적을 위해 선택한 방법론 설명
3. 연구의 결과 및 결론

- Abstract 의 예

Title: A second-order projection method for the incompressible Navier-Stokes equations

Abstract :

In this paper we describe a second-order projection method for the time-dependent, incompressible Navier-Stokes equations. As in the original projection method developed by Chorin, we first solve diffusion-convection equations to predict intermediate velocities which are then projected onto the space of divergence -free vector fields. By introducing more coupling between the diffusion-convection step and the projection step we obtain a temporal discretization that is second-order accurate. Our treatment of the diffusion-convection step uses a specialized higher order Godunov method for differencing the nonlinear convective terms that provides a robust treatment of these terms at high Reynolds number. The Godunov procedure is second-order accurate for smooth flow and remains stable for discontinuous initial data, even in the zero-viscosity limit. We approximate the projection directly using a Galerkin procedure that uses a local basis for discretely divergence-free vector fields. Numerical results are resented validating the convergence properties of the method. We also apply the method to doubly periodic shear-layers to assess the perform-ance of the method on more difficult applications.

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1. 이 연구의 주된 목적과 연구 범위 기술

Abstract

In this paper we describe a second-order projection method for the time-dependent, incompressible Navier-Stokes equations. As in the original projection method developed by Chorin, we first solve diffusion-convection equations to predict intermediate velocities which are then projected onto the space of divergence-free vector fields. By introducing more coupling between the diffusion-convection step and the projection step we obtain a temporal discretization that is second-order accurate. Our treatment of the diffusion-convection step uses a specialized higher order Godunov method for differencing the nonlinear convective terms that provides a robust treatment of these terms at high Reynolds number. The Godunov procedure is second-order accurate for smooth flow and remains stable for discontinuous initial data, even in the zero-viscosity limit. We approximate the projection directly using a Galerkin procedure that uses a local basis for discretely divergence-free vector fields. Numerical results are presented validating the convergence prope y the method to doubly periodic sh ance of the method on more diffi

2. 연구의 목적을 위해
선택한 방법론 설명

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using a Galerkin procedure that uses a local basis for discretely divergence-free vector fields. Numerical results are presented validating the convergence properties of the method. We also apply the method to doubly periodic shear-layers to assess the performance of the method on more difficult applications.

3. 연구의 결과 및 결론

Abstract :

Energy-efficient wireless communication is very important for battery-constrained mobile devices. For mobile devices in a cellular system, uplink power consumption dominates the wireless power budget because of RF power requirements for reliable transmission over long distances. Our previous work in this area focused on optimizing energy efficiency by maximizing the instantaneous bits-per-Joule metric through iterative approaches, which resulted in significant energy savings for uplink cellular OFDMA transmissions. In this paper, we develop energy efficient schemes with significantly lower complexity when compared to iterative approaches, by considering time-averaged bits-per-Joule metrics. We consider an uplink OFDMA system where multiple users communicate to a central scheduler over frequency-selective channels with high energy efficiency. The scheduler allocates the system bandwidth among all users to optimize energy efficiency across the whole network. Using time averaged metrics, we derive energy optimal techniques in “closed forms” for per-user link adaptation and resource scheduling across users. Simulation results show that the proposed schemes not only have low complexity but also perform close to the globally optimum solutions obtained through exhaustive search.

Abstract :

Efficient utilization of radio resources in wireless networks is crucial and has been investigated extensively. This letter considers a wireless relay network where multiple user pairs conduct bidirectional communications via multiple relays based on orthogonal frequency-division multiplexing (OFDM) transmission. The joint optimization of channel and relay assignment, including subcarrier pairing, subcarrier allocation as well as relay selection, for total throughput maximization is formulated as a combinatorial optimization problem. Using a graph theoretical approach, we solve the problem optimally in polynomial time by transforming it into a maximum weighted bipartite matching (MWBM) problem. Simulation studies are carried out to evaluate the network total throughput versus transmit power per node and the number of relay nodes.

Abstract :

We consider molecular communication, with information conveyed in the time of release of molecules. The main contribution of this paper is the development of a theoretical foundation for such a communication system. Specifically, we develop the additive inverse Gaussian (IG) noise channel model: a channel in which the information is corrupted by noise with an inverse Gaussian distribution. We show that such a channel model is appropriate for molecular communication in fluid media - when propagation between transmitter and receiver is governed by Brownian motion and when there is positive drift from transmitter to receiver. Taking advantage of the available literature on the IG distribution, upper and lower bounds on channel capacity are developed, and a maximum likelihood receiver is derived. Theory and simulation results are presented which show that such a channel does not have a single quality measure analogous to signal-to-noise ratio in the AWGN channel. It is also shown that the use of multiple molecules leads to reduced error rate in a manner akin to diversity order in wireless communications. Finally, we discuss some open problems in molecular communications that arise from the IG system model.

Abstract에서 피해야 할 표현

Abstract에서는 가능한 한 표나 그림을 포함하거나 가리키면 안되고 다른 논문을 인용하지 말아야 한다. 많은 학술지들은 학술지를 구입해야 본문 내용을 열람할 수 있는데 본문에 참고문헌이 나열되어져 있어서 Abstract에 참고문헌 번호가 있으면 학술지를 구매하지 않은 독자는 참고문헌을 확인할 수가 없기 때문이다. 부득이 사용해야 하는 경우에는 다음과 같은 방법으로 인용하도록 한다.

Abstract에서 피해야 할 표현의 예

- We develop a conservative, second-order accurate fully implicit discretization of the Navier-Stokes (NS) and Cahn-Hilliard (CH) system that has an associated discrete energy functional. This system provides a diffuse-interface description of binary fluid flows with compressible or incompressible flow components [3]. In this work, we focus on the case of flows containing two immiscible, incompressible and density-matched components.

Abstract에서 참고문헌을 인용할때

- We develop a conservative, second-order accurate fully implicit discretization of the Navier-Stokes (NS) and Cahn-Hilliard (CH) system that has an associated discrete energy functional. This system provides a diffuse-interface description of binary fluid flows with compressible or incompressible flow components [R. Soc. Lond. Proc. Ser. A Math. Phys. Eng. Sci. 454 (1998) 2617]. In this work, we focus on the case of flows containing two immiscible, incompressible and density-matched components.

Introduction

Introduction에서 포함해야 하는 내용

- 연구 주제의 중요성 (important, attract)
- 기존 연구 방법에 대한 논의(간략한 Review)와 한계점 서술 (however, but)
- 본 연구 결과의 중요성 (in this paper, in this work)
- 본문의 내용

The remainder of the paper is organized as follows. Section II introduces the system model and problem formulation. The graph based approach is detailed in Section III. Section IV provides simulations to verify the effectiveness of the algorithm. Finally, we conclude the paper in Section V.

Introduction : 참고문헌 인용하기 (Ⅰ)

- 참고문헌을 사용할 때는 최초의 논문, 최초의 논문을 바탕으로 나온 최근의 논문, 그리고 알기 쉽게 잘 기술된 논문을 인용하는 것이 좋다. 논문인용을 피해야 하는 것 중에 하나는 논문을 보아도 내용을 알 수 없거나 다시 다른 논문을 인용한 논문의 인용을 피해야 한다. 인용할 논문을 본인이 직접 찾아보고 원하는 정보가 있는지 필히 확인해야 한다. 왜냐하면 잘못된 인용은 독자로 하여금 좌절과 기만을 안겨주기 때문이다.
- 논문과 관련된 active한 다른 연구자의 논문도 빠짐없이 객관적으로 인용한다 (리뷰어가 될 가능성이 있다).

Introduction :
참고문헌 인용하기 (Ⅱ)

1. 인용 출처를 밝혀야 하는 이유

: 인용 출처를 통해, 우선 다른 연구자의 공로를 인정한다. 인용한 사실의 정확성을 독자에게 알린다. 배경이 된 연구 과거 논문들을 독자에게 알린다. 그리고 연구를 계승하거나 심화하려는 독자에게 도움을 준다.

2. 참고문헌 저자 표기

: 논문의 본문에서 참고문헌의 저자를 표기할 때는 저자가 한 명 또는 두 명인 경우 모든 저자의 이름을 쓰지만 세 명 이상인 경우 제1저자의 이름만 쓰고

et al.을 사용하여 나타낸다.

예) Some approaches may refer to Abate and Whitt [1], Ata et al. [2], and Yamada [3].

Introduction의 예

다음은 “Energy Stable Schemes for Cahn-Hilliard Phase-Field Model of Two-Phase Incompressible Flows” 라는 논문의 Introduction 이다.

1. 본 연구의 중요성 부각

The phase-field approach for multi-phase incompressible flows have attracted much attention recently (cf. [11, 2, 16, 12, 15, 26] and the references therein).

Introduction의 예

2. 간단한 기존의 연구 방법론 review

Since the phase-field (or diffusive interface) model can be considered as an approximation to the sharp interface model, one can use the gradient flow based on either the conserved Cahn-Hilliard dynamics (cf. [5]) or the Allen-Cahn dynamics (cf. [1]) with a non-local Lagrange multiplier, leading to the Cahn-Hilliard phase-field model and Allen--Cahn phase-field model, respectively. Both models, at least in the matched density case, can be derived from an energetic variational approach. Thus, they admit an energy law, making it possible to design numerical schemes which satisfy a corresponding discrete energy law that automatically ensures their numerical stability (cf., for instance, [7, 14, 3, 25]).

Introduction의 예

3. 기존 연구의 한계점

However, most of the analysis and simulation of the phase-field model for two-phase flows have been restricted to the matched density case or with a Boussinesq approximation. The main difficulty for two-phase flows with different density is that the standard phase- field model with variable density does not admit an energy law, making it difficult to carry out mathematical and numerical analysis. In a recent work (cf. [23]), the authors proposed a phase-field model with variable density which admits an energy law, and constructed efficient and simple energy stable time discretization schemes for the corresponding Allen-Cahn phase-field model.

Introduction의 예

4. 기존 연구결과의 한계점을 극복한 본 연구 결과의 주된 내용

The main objective of this paper is to construct efficient and simple energy stable time discretization schemes for the Cahn-Hilliard phase-field model with matched density and variable density. The main additional theoretical and numerical difficulty associated with the Cahn-Hilliard model, as opposed to the Allen-Cahn model, is that the fourth-order spatial derivatives are involved in the Cahn-Hilliard equation for the phase function. By using a mixed formulation for the fourth-order Cahn--Hilliard phase equation and using the chemical potential to reformulate the surface tension term in the momentum equation, we are able to extend the results presented in [23] for the Allen-Cahn phase-field model to the Cahn-Hilliard phase-field model.

Introduction의 예

5. 본문의 outline

The rest of the paper is organized as follows. In the next section, we present the Cahn-Hilliard phase-field model for two-phase incompressible flows with matched density and variable density. Then, in Section 3, we construct several efficient time discretization schemes for both matched density and variable density cases, and show that they are unconditionally energy stable. Some numerical results and discussions are presented in the last section.

Equation (1.1) with $\delta > 0$ arises as a phenomenological continuum model for phase separation in glass and polymer systems where intermolecular friction forces may be expected to be of importance. See Novick-Cohen [7] for a derivation of the model and Novick-Cohen and Pego [8] for more physical motivation. The viscous Cahn–Hilliard equation, which is viewed as a singular limit of the phase field model of phase transition, has been studied by Bai et al. [9]. They have studied the similarities and differences between the Cahn–Hilliard equation ($\delta = 0$) and Allen-Cahn equation by using the viscous Cahn–Hilliard equation ($\delta > 0$). Metastable pattern for viscous Cahn–Hilliard equation has been studied by Reyna and Ward [10]. Using explicit energy calculations, Grinfeld and Novick-Cohen [11] have established a Morse decomposition of the stationary solutions of viscous Cahn–Hilliard equation. Existence theory of the solution of (1.1) has been shown by Elliott and Stuart [12], using semigroup properties.

The equation (1.1) arises as a phenomenological continuum model for phase separation in glass and polymer systems where intermolecular friction forces may be expected to be of importance. See Novick-Cohen[13] for a derivation of the equation (1.1) with the term δu_{xxt} which reflects some viscous effects that were neglected in Cahn and Hilliard[3]. Also see Novick-Cohen and Pego [14] for more physical motivation. The viscous Cahn-Hilliard equation, which is viewed as a singular limit of the phase field model of phase transition, has been studied by Bai, Elliott, Gardiner, Spence, and Stuart [2]. They have studied the similarities and differences between the Cahn-Hilliard equation($\delta = 0$) and Allen-Cahn equation by using the viscous Cahn-Hilliard equation($\delta > 0$). Metastable pattern for the viscous Cahn-Hilliard equation has been studied by Reyna and Ward[15]. Using explicit energy calculations, Grinfeld and Novick-Cohen[12] have established a Morse decomposition of the stationary solutions of the viscous Cahn-Hilliard equation.

Existence theory of the solution for (1.1) has been shown in Elliott and Stuart[10]. Choo and Chung[4] have investigated the exponential decay of the clas-

Results

본인의 연구가 분야에서 최초의 시도임을 밝히는 표현

- To the authors' knowledge this is the first time when neural networks are being applied to resource discovery problem.

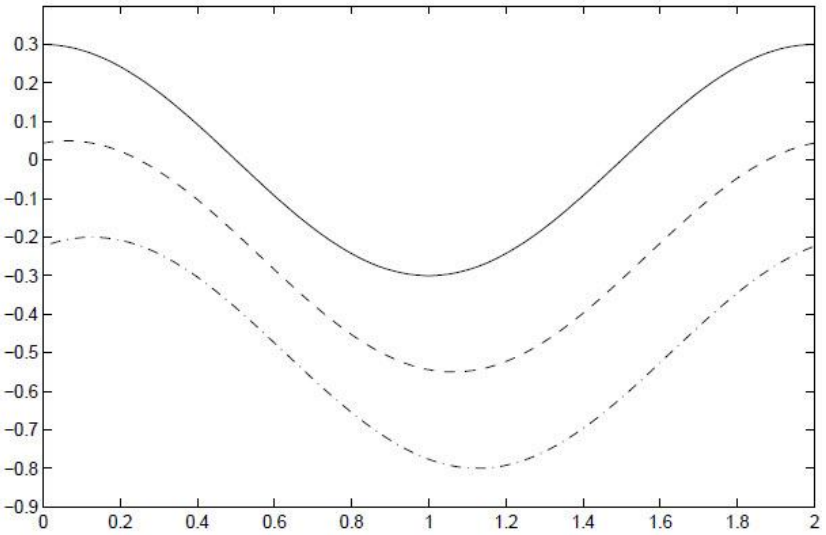
- To the authors' knowledge, there has been no trial to check the accuracy of the SDS model.

- To the author's knowledge, the present study is the first attempt to use the IBM method.

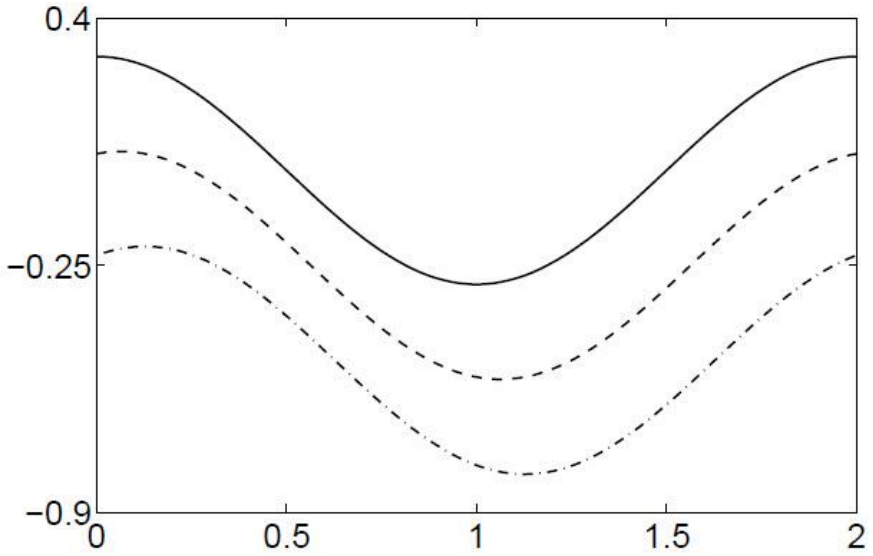
연구의 novelty를 보여줄 수 있다.

Figure의 Caption 쓰는 방법

- Ticks의 크기와 그래프의 굵기를 적당하게 한다.



(a)

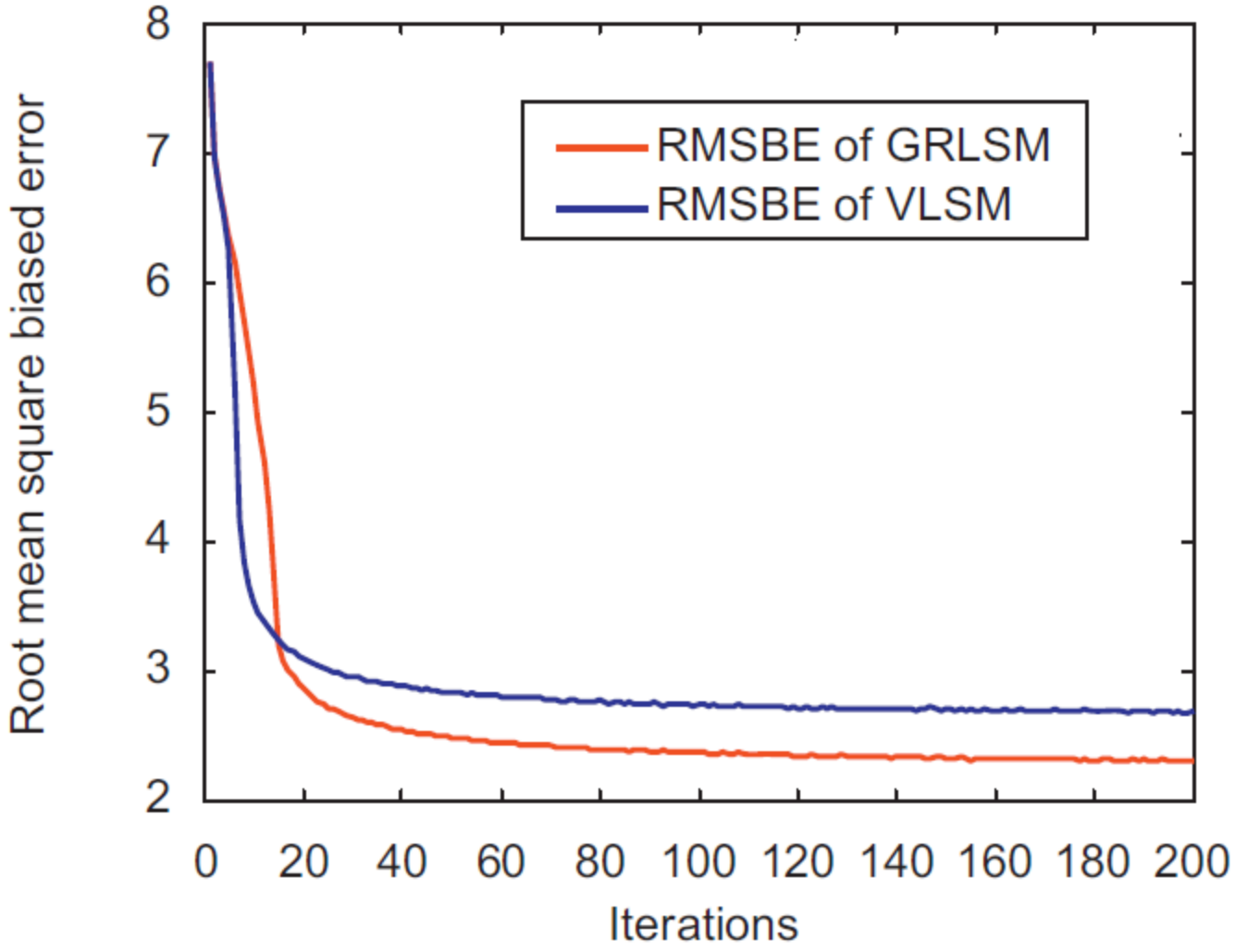


(b)

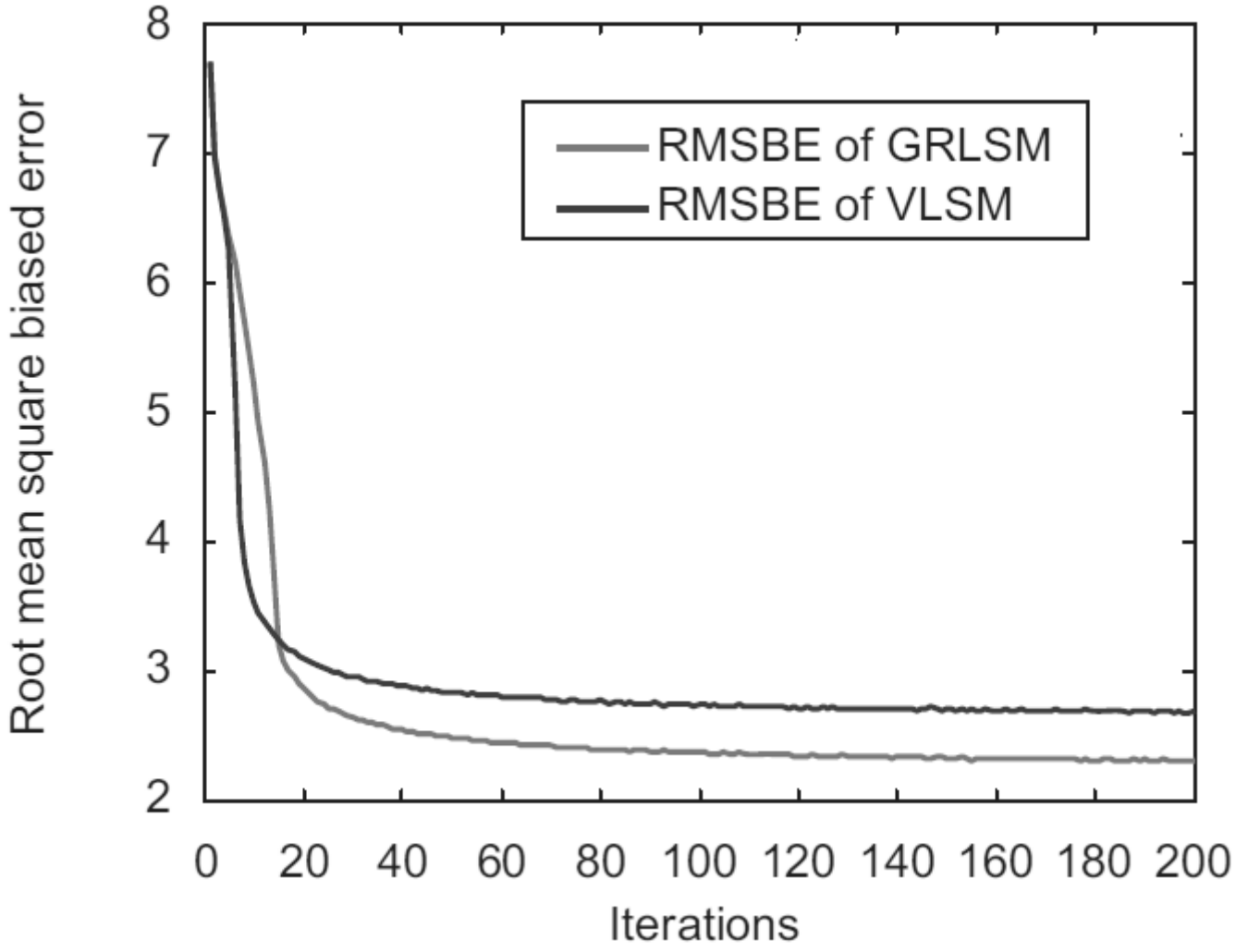
컬러 그림의 삽입

- 컬러 그림일 경우 흑백 프린터로 출력했을 경우에도 보기 좋도록 주의하고 될 수 있는 한 흑백 그림으로 제시한다.

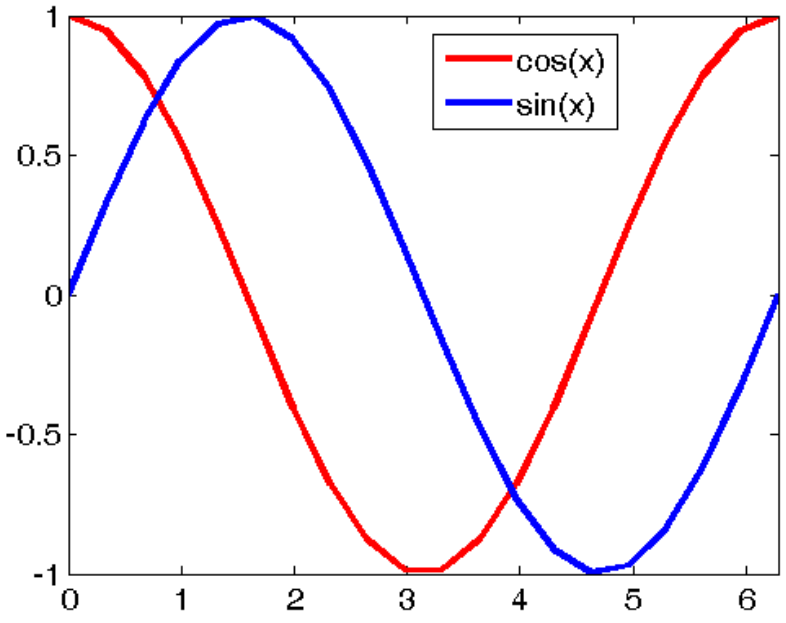
- 컬러로 그림을 넣고 본문에서 그림을 설명할 때 컬러로 설명을 하면 흑백으로 인쇄한 것과 일치하지 않아서 논문 내용을 이해하는데 지장이 있기 때문이다.



The RMSBE values of GRLSM(the red solid line) and VLSM(the blue solid line) during the evolution. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)



The RMSBE values of GRLSM(the red solid line) and VLSM(the blue solid line) during the evolution. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)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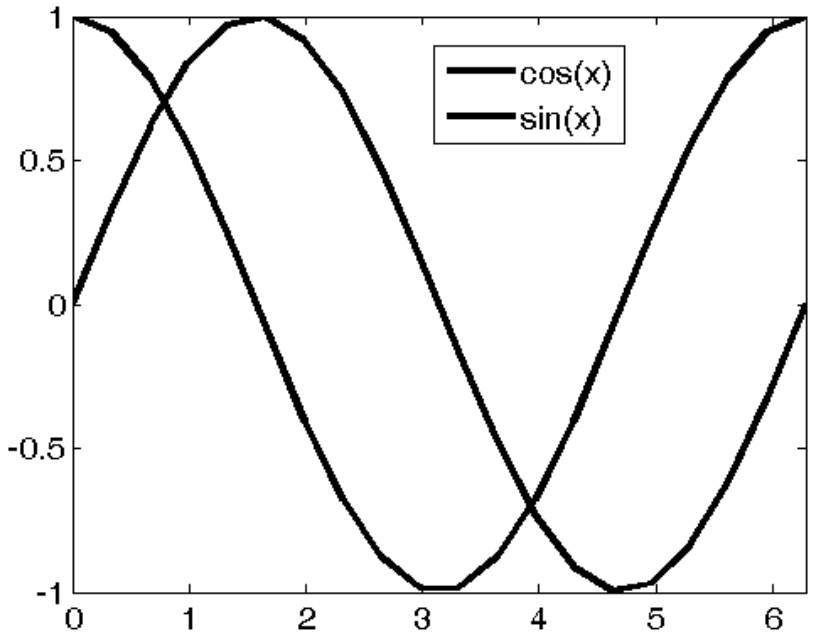
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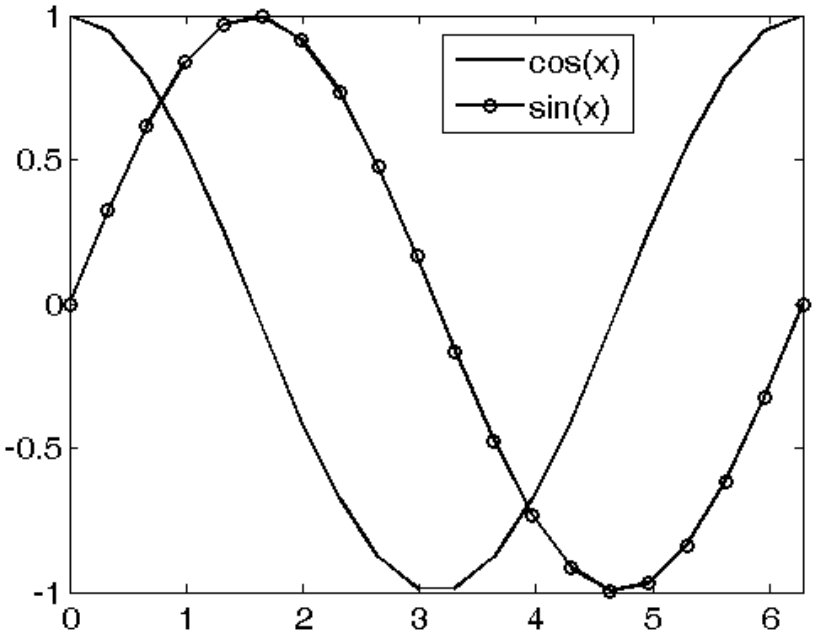
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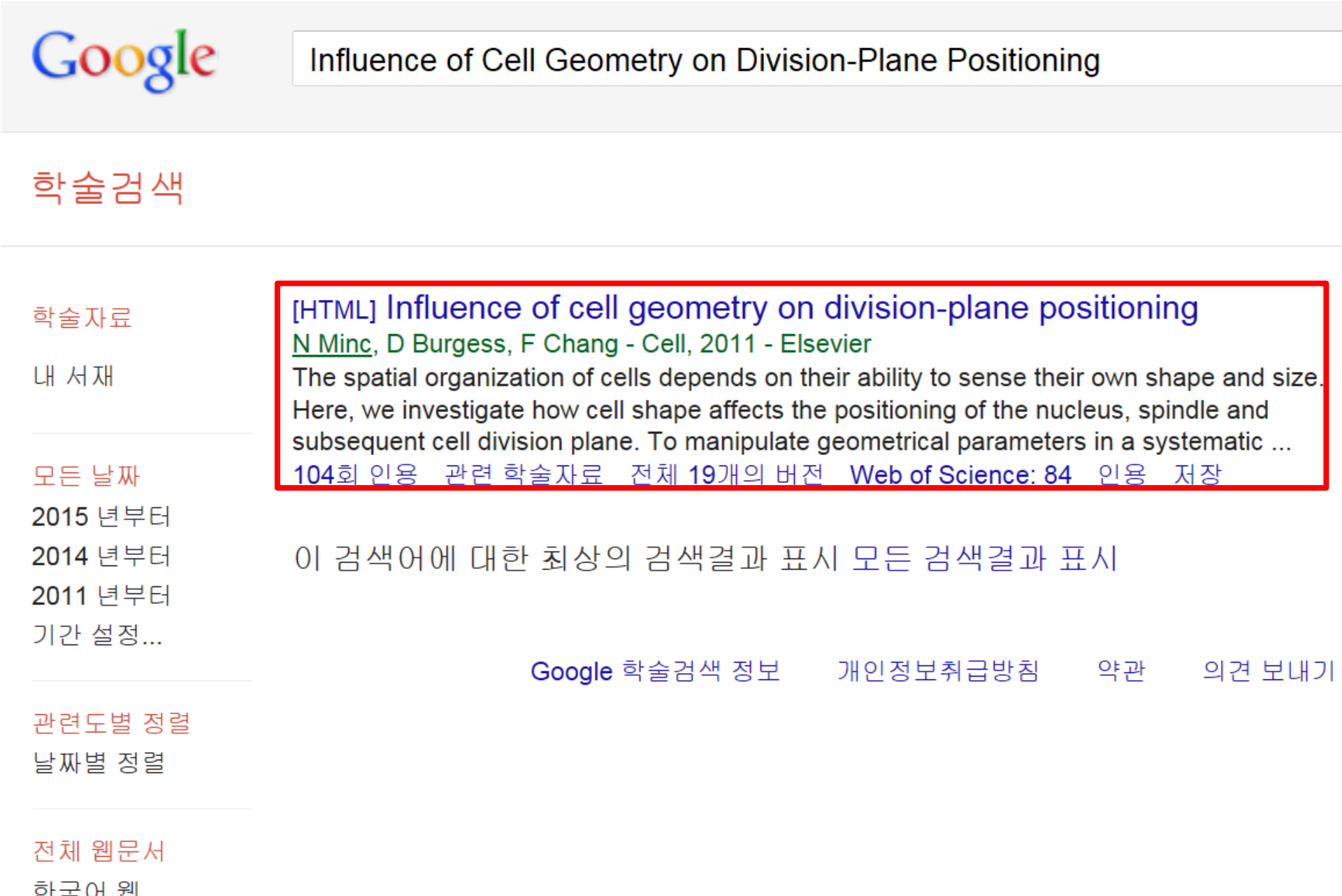

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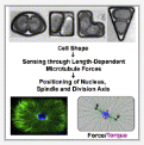
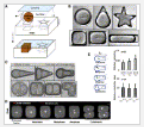

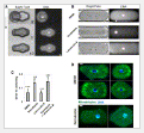

Cell

Volume 144, Issue 3, 4 February 2011, Pages 414–426

Theory

Influence of Cell Geometry on Division-Plane Positioning

Nicolas Minc[1, 3, 4], David Burgess[2, 3], Fred Chang[1, 3]

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Summary

The spatial organization of cells depends on their ability to sense their own shape and size. Here, we investigate how cell shape affects the positioning of the nucleus, spindle and subsequent cell division plane. To manipulate geometrical parameters in a systematic manner, we place individual sea urchin eggs into microfabricated chambers

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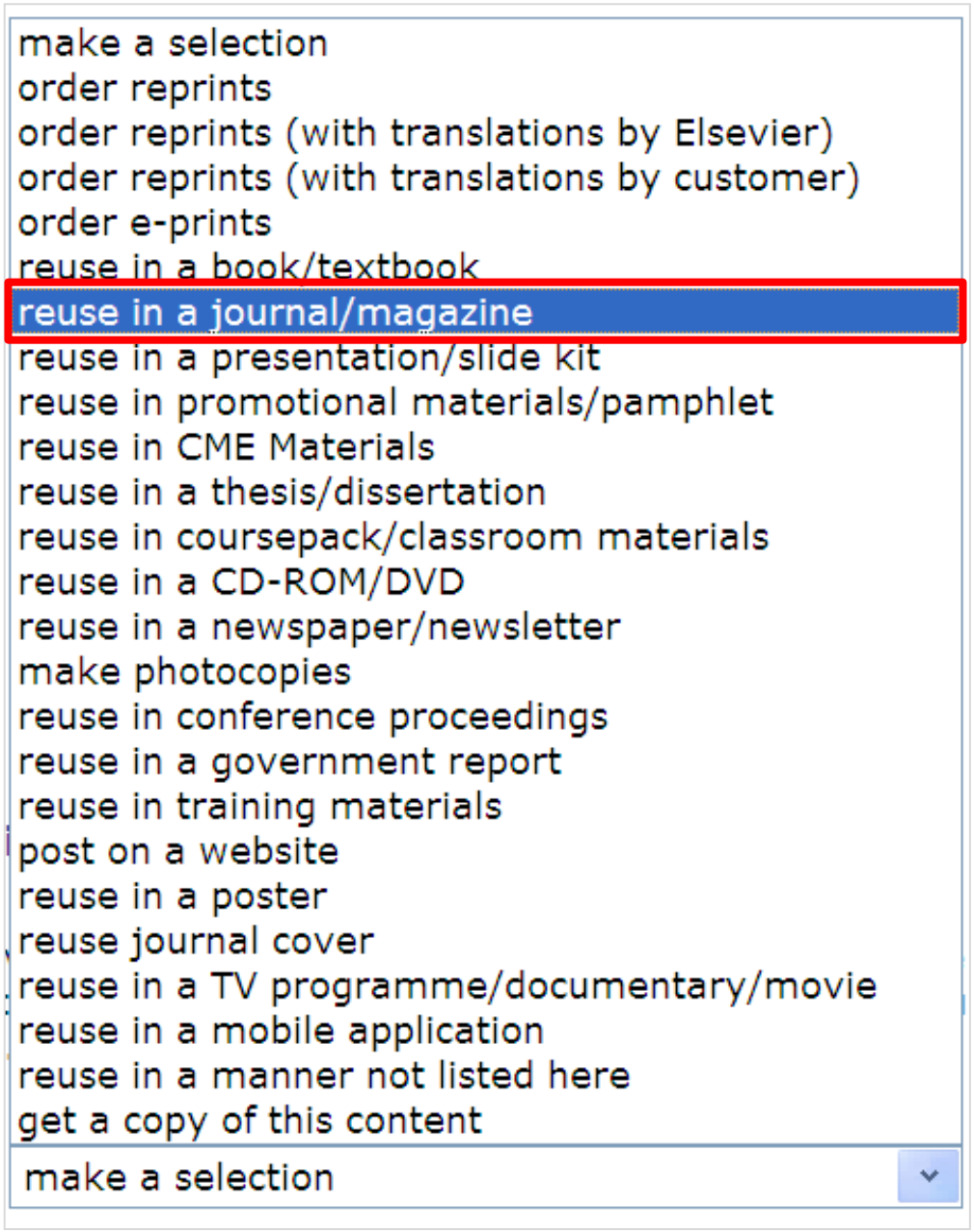

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Conclusion

- 결론에서는 주요한 발견이 무엇인가와 연구의 결과가 함축하는 것을 기술한다.
- A brief statement of the major findings
- Implications of the study
- 추가연구를 제시한다 (future research directions).
- Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion.

주의: 결론은 연구의 요약이 아니다. 요약은 abstract에 있다.

Future work

- 현재 논문에서는 다루지 못했지만 앞으로의 방향을 제시할 수 있다.

⇒ 이것은 약점이 될 수 있음과 동시에 연구하지 못함을 언급함으로써 부족한 점을 보완하는 문구가 될 수 있다.

(revision reply 에 사용할수있다.)

- 예시:
  - In the future work ~
  - As future research ~

Future work의 예시

- According to the numerical studies, several issues have arisen which motivates further studies in order to improve the predictability of the simulations. The most important one is to obtain suitable material parameters, especially the free energy function and its parameters. Also many materials used in the microfluidic device are of biological nature and hence non-Newtonian, the current model using Newtonian rheology for each fluid might not be accurate enough depending on the material and flow regime. The model could be improved further in this respect by employing, for instance, a viscoelastic constitutive model for more rigorous modeling of the material characteristics. In addition, surfactants are present in practice, which are known to have a large impact on drop dynamics; future work will be devoted to add surfactants as an additional component. From [Jang Min Park and Patrick D. Anderson, A ternary model for double-emulsion formation in a capillary microfluidic device, 2012.]

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- 한국연구재단의 지원을 받은 연구결과의 사사 문구는 다음과 같다. 다만 사업별 그리고 연도별 사사문구의 차이가 있을 수 있으므로 재단 홈페이지를 통해 확인해 보아야 한다.

This research was supported by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (No. 한국연구재단에서 부여한 과제 관리번호)

- 2014년 사사

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- 두 개 이상의 기관을 사사하고 싶을 때
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  - We greatly appreciate Dr. Junseok Kim for generously providing the multigrid code for the binary and ternary Cahn-Hilliard equations without the presence of elastic energy.

- 주의할 사항은 만약에 논문의 결과가 잘못되었을 경우 많은 도움을 주었다고 언급한 사람에게 누가 될 수 있으므로 사전에 허락을 받거나 논문의 결과에 확신이 있을 때 사사한다.

학위논문 사사

- I am heartily thankful to my supervisor, Jane Eyre, whose encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the subject. Lastly, I offer my regards and blessings to all of those who supported me in any respect.

Appendix

- 저자가 독자의 논문의 이해를 돕기 위해서 좀 더 자세하게 기술한 내용들은 Appendix에 넣어 논문을 작성한다.
- 위치는 Conclusion 다음, References 앞이고, Appendix가 많으면 A, B, C와 같이 파트를 나눌 수도 있다.

5. Conclusions

In this article, we proposed a new phase field model for the incompressible, immiscible ternary fluid flows with interfaces. The model consists of a Navier–Stokes equation with an extra surface tension term resulting from the presence of interfaces and a Cahn–Hilliard equation with the corresponding transport term. We used a recent chemical potential [5] and continuous surface tension force formulation [20], which has the capability to generalize to multi-component fluid flow models. We presented several illustrative numerical examples which exhibited various physical mechanisms of the model and demonstrated its robustness and versatility. In upcoming work, we will investigate the cases with more than three-component fluid flows with surface tension. In that work, we will generalize the continuous surface tension force formulation to multi-component (more than three) fluid flows.

Acknowledgement

This work was supported by the Korea Research Foundation Grant funded by the Korean Government (MOEHRD) (KRF-2006-C00225).

Appendix A. Ternary Cahn–Hilliard system with advection – a nonlinear multigrid method

In this section, we describe a nonlinear Full Approximation Storage (FAS) multigrid method to solve the nonlinear discrete system at the implicit time level. If the nonlinearity, $\mathbf{f}(\mathbf{c})$ in Eq. (19), is treated using one step of Newton's iteration, we obtain Gauss–Seidel–Newton relaxation. See the reference text [34] for additional details and the following

We set the initial guess, $\mathbf{c}_k^0 = \mathbf{c}_k^n$ and $\boldsymbol{\mu}_k^{-\frac{1}{2}} = \boldsymbol{\mu}_k^{n-\frac{1}{2}}$. Now, define the FAScycle.

Step 1 – Pre-smoothing:

$$\left\{\bar{\mathbf{c}}_k^m, \bar{\boldsymbol{\mu}}_k^{m-\frac{1}{2}}\right\} = \mathrm{SMOOTH}^{\nu}(\mathbf{c}_k^m, \boldsymbol{\mu}_k^{m-\frac{1}{2}}, N_k, \phi_k^n, \psi_k^n) \quad \text{on } \Omega_k \text{ grid},$$

which means performing ν smoothing steps with an initial approximation $\mathbf{c}_k^m, \boldsymbol{\mu}_k^{m-\frac{1}{2}}, \phi_k^n, \psi_k^n$, and the SMOOTH relaxation operator to get the approximation $\{\bar{\mathbf{c}}_k^m, \bar{\boldsymbol{\mu}}_k^{m-\frac{1}{2}}\}$. One SMOOTH relaxation operator step consists of solving the system (A.1) and (A.2) given below by the 4×4 matrix inversion for each ij. First, let us discretize Eq. (18).

$$\frac{\bar{\mathbf{c}}_{ij}^m}{\Delta t} + \frac{4}{h^2 Pe}\bar{\boldsymbol{\mu}}_{ij}^{m-\frac{1}{2}} = \phi_{ij}^n + \frac{\boldsymbol{\mu}_{i+1,j}^{m-\frac{1}{2}} + \bar{\boldsymbol{\mu}}_{i-1,j}^{m-\frac{1}{2}} + \boldsymbol{\mu}_{i,j+1}^{m-\frac{1}{2}} + \bar{\boldsymbol{\mu}}_{i,j-1}^{m-\frac{1}{2}}}{h^2 Pe}. \tag{A.1}$$

Next, let us discretize Eq. (19). Since $\mathbf{f}(\bar{\mathbf{c}}_{ij}^m)$ is nonlinear with respect to $\bar{\mathbf{c}}_{ij}^m$, we linearize $\mathbf{f}(\bar{\mathbf{c}}_{ij}^m)$ at $\bar{\mathbf{c}}_{ij}^m$, i.e.,

$$\begin{aligned}
&\mathbf{f}(\bar{\mathbf{c}}_{ij}^m) \approx \mathbf{f}(\mathbf{c}_{ij}^m) + (\bar{\mathbf{c}}_{ij}^m - \mathbf{c}_{ij}^m)\frac{\partial \mathbf{f}(\mathbf{c}_{ij}^m)}{\partial \mathbf{c}},\\
&\quad \text{where } \frac{\partial \mathbf{f}(\mathbf{c}_{ij}^m)}{\partial \mathbf{c}} = \begin{pmatrix} \frac{\partial f_1(\mathbf{c}_{ij}^m)}{\partial c_1} & \frac{\partial f_2(\mathbf{c}_{ij}^m)}{\partial c_1} \\ \frac{\partial f_1(\mathbf{c}_{ij}^m)}{\partial c_2} & \frac{\partial f_2(\mathbf{c}_{ij}^m)}{\partial c_2} \end{pmatrix},\\
&-\bar{\mathbf{c}}_{ij}^m\left(\frac{\partial \mathbf{f}(\mathbf{c}_{ij}^m)}{2\partial \mathbf{c}} + \frac{2\epsilon^2}{h^2}\right) + \bar{\boldsymbol{\mu}}_{ij}^{m-\frac{1}{2}}\\
&= \psi_{ij}^n + \frac{1}{2}\mathbf{f}(\mathbf{c}_{ij}^m) - \mathbf{c}_{ij}^m\frac{\partial \mathbf{f}(\mathbf{c}_{ij}^m)}{2\partial \mathbf{c}}\\
&\quad - \frac{\epsilon^2}{2h^2}(\mathbf{c}_{i+1,j}^m + \bar{\mathbf{c}}_{i-1,j}^m + \mathbf{c}_{i,j+1}^m + \bar{\mathbf{c}}_{i,j-1}^m).
\end{aligned} \tag{A.2}$$

notations. The convective CH Eqs. (18) and (19) can be written in the form $N(\mathbf{c}^{n+1}, \mu^{n+\frac{1}{2}}) = (\phi^n, \psi^n)$, where the nonlinear system operator (N) is defined as

$$N(\mathbf{c}^{n+1}, \mu^{n+\frac{1}{2}}) = \left(\frac{\mathbf{c}^{n+1}}{\Delta t} - \frac{1}{Pe}\Delta_d \mu^{n+\frac{1}{2}}, \mu^{n+\frac{1}{2}} - \frac{1}{2}\mathbf{f}(\mathbf{c}^{n+1}) + \frac{\epsilon^2}{2}\Delta_d \mathbf{c}^{n+1} \right)$$

and the source term is $(\phi^n, \psi^n) = \left(\frac{\mathbf{c}^n}{\Delta t} - (\mathbf{u}\cdot\nabla_d \mathbf{c})^n, \frac{1}{2}\mathbf{f}(\mathbf{c}^n) - \frac{\epsilon^2}{2}\Delta_d \mathbf{c}^n\right)$.

In the following description of one FAS cycle, we assume a sequence of grids Ω_k (Ω_{k-1} that is coarser than Ω_k by factor 2). Given the number v of pre- and post-smoothing relaxation sweeps, an iteration step for the nonlinear multigrid method using the V-cycle is formally written:

FAS multigrid cycle:

$$\left\{\mathbf{c}_k^{m+1}, \mu_k^{m+\frac{1}{2}}\right\} = \mathrm{FAScycle}(k, \mathbf{c}_k^m, \mu_k^{m-\frac{1}{2}}, N_k, \phi_k^n, \psi_k^n, v)$$

on Ω_k grid.

That is, $\{\mathbf{c}_k^m, \mu_k^{m-\frac{1}{2}}\}$ and $\{\mathbf{c}_k^{m+1}, \mu_k^{m+\frac{1}{2}}\}$ are the approximations of $\{\mathbf{c}_k^{n+1}(x_i, y_j),\ \mu_k^{n+\frac{1}{2}}(x_i, y_j)\}$ before and after an FAScycle.

Step 2 – Compute the defect:

$$(\overline{\mathbf{def}}_{1\,k}^m, \overline{\mathbf{def}}_{2\,k}^m) = (\phi_k^n, \psi_k^n) - N_k(\bar{\mathbf{c}}_k^m, \bar{\mu}_k^{m-\frac{1}{2}}).$$

Step 3 – Restrict the defect and $\{\bar{\mathbf{c}}_k^m, \bar{\mu}_k^{m-\frac{1}{2}}\}$:

$$(\overline{\mathbf{def}}_{1\,k-1}^m, \overline{\mathbf{def}}_{2\,k-1}^m, \bar{\mathbf{c}}_{k-1}^m, \bar{\mu}_{k-1}^{m-\frac{1}{2}}) = I_k^{k-1}(\overline{\mathbf{def}}_{1\,k}^m, \overline{\mathbf{def}}_{2\,k}^m, \bar{\mathbf{c}}_k^m, \bar{\mu}_k^{m-\frac{1}{2}}).$$

Step 4 – Compute the right-hand side:

$$(\phi_{k-1}^n, \psi_{k-1}^n) = (\overline{\mathbf{def}}_{1\,k-1}^m, \overline{\mathbf{def}}_2^m k-1) + N_{k-1}(\bar{\mathbf{c}}_{k-1}^m, \bar{\mu}_{k-1}^{m-\frac{1}{2}}).$$

Step 5 – Compute an approximate solution $\{\hat{\mathbf{c}}_{k-1}^m, \hat{\mu}_{k-1}^{m-\frac{1}{2}}\}$ *on* Ω_{k-1}:

$$N_{k-1}(\mathbf{c}_{k-1}^m, \mu_{k-1}^{m-\frac{1}{2}}) = (\phi_{k-1}^n, \psi_{k-1}^n). \tag{A.3}$$

If $k = 1$, we explicitly invert a 4×4 matrix to obtain the solution. If $k > 1$, we solve Eq. (A.3) by performing a

FAS k-grid cycle using $\{\bar{\mathbf{c}}_{k-1}^m, \bar{\mu}_{k-1}^{m-\frac{1}{2}}\}$ as an initial approximation:

$$\{\hat{\mathbf{c}}_{k-1}^m, \hat{\mu}_{k-1}^{m-\frac{1}{2}}\} = \mathrm{FAScycle}(k-1, \bar{\mathbf{c}}_{k-1}^m, \bar{\mu}_{k-1}^{m-\frac{1}{2}}, N_{k-1}, \phi_{k-1}^n, \psi_{k-1}^n, v).$$

Step 6 – Compute the coarse grid correction (CGC):

$$\hat{\mathbf{v}}_{k-1}^m = \hat{\mathbf{c}}_{k-1}^m - \bar{\mathbf{c}}_{k-1}^m, \hat{\mathbf{w}}_{k-1}^{m-\frac{1}{2}} = \hat{\mu}_{k-1}^{m-\frac{1}{2}} - \bar{\mu}_{k-1}^{m-\frac{1}{2}}.$$

Step 7 – Interpolate the correction:

$$(\hat{\mathbf{v}}_k^m, \hat{\mathbf{w}}_k^{m-\frac{1}{2}}) = I_{k-1}^k(\hat{\mathbf{v}}_{k-1}^m, \hat{\mathbf{w}}_{k-1}^{m-\frac{1}{2}}).$$

Step 8 – Compute the corrected approximation on Ω_k:

$$\mathbf{c}_k^{m,\text{after CGC}} = \bar{\mathbf{c}}_k^m + \hat{\mathbf{v}}_k^m, \mu_k^{m-\frac{1}{2},\text{after CGC}} = \bar{\mu}_k^{m-\frac{1}{2}} + \hat{\mathbf{w}}_k^{m-\frac{1}{2}}.$$

Step 9 – Post-smoothing:

$$\{\mathbf{c}_k^{m+1}, \mu_k^{m+\frac{1}{2}}\} = \mathrm{SMOOTH}^v(\mathbf{c}_k^{m,\text{after CGC}}, \mu_k^{m-\frac{1}{2},\text{after CGC}}, N_k, \phi_k^n, \psi_k^n)$$

on Ω_k grid.

This completes the description of a nonlinear FAScycle.

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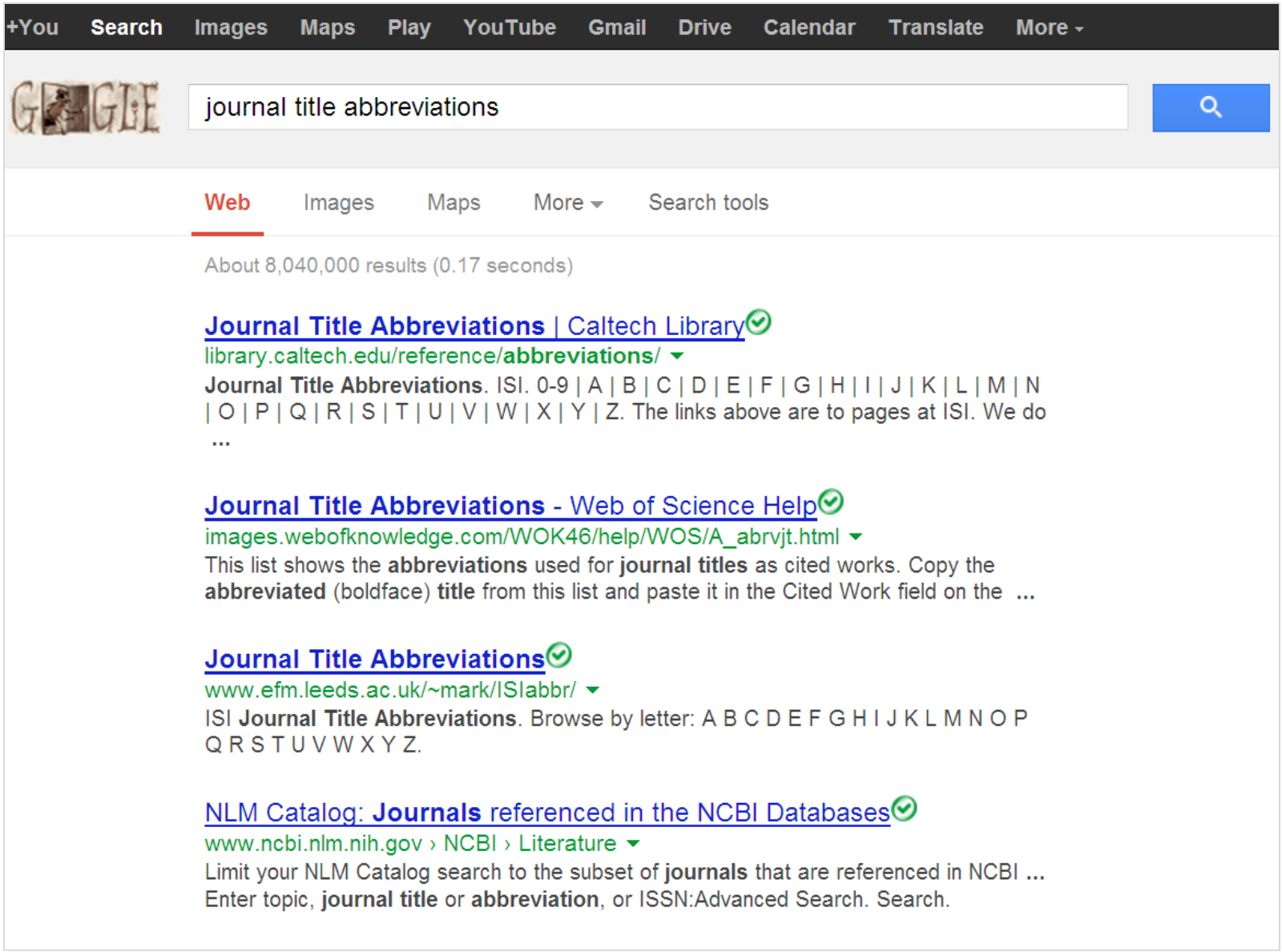

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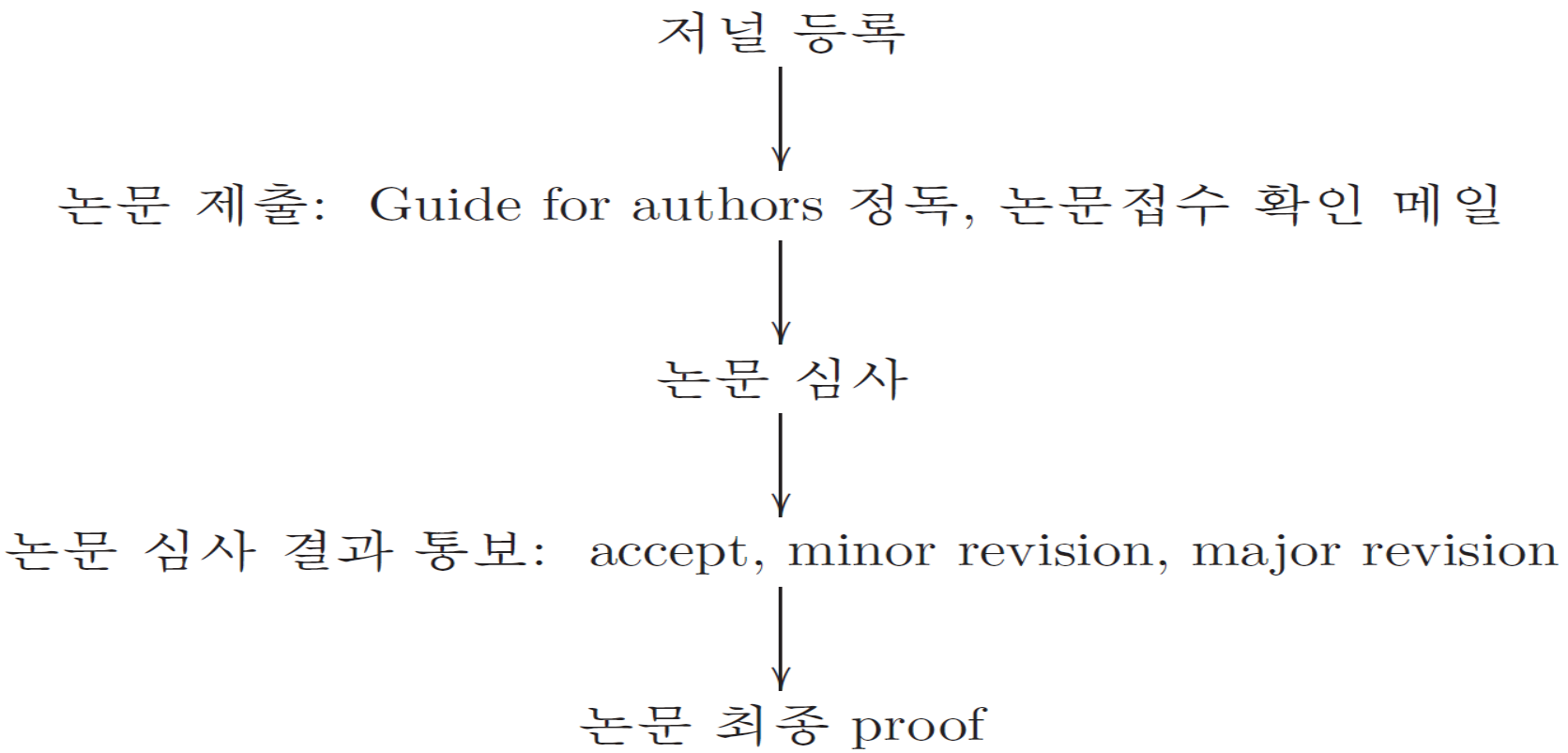

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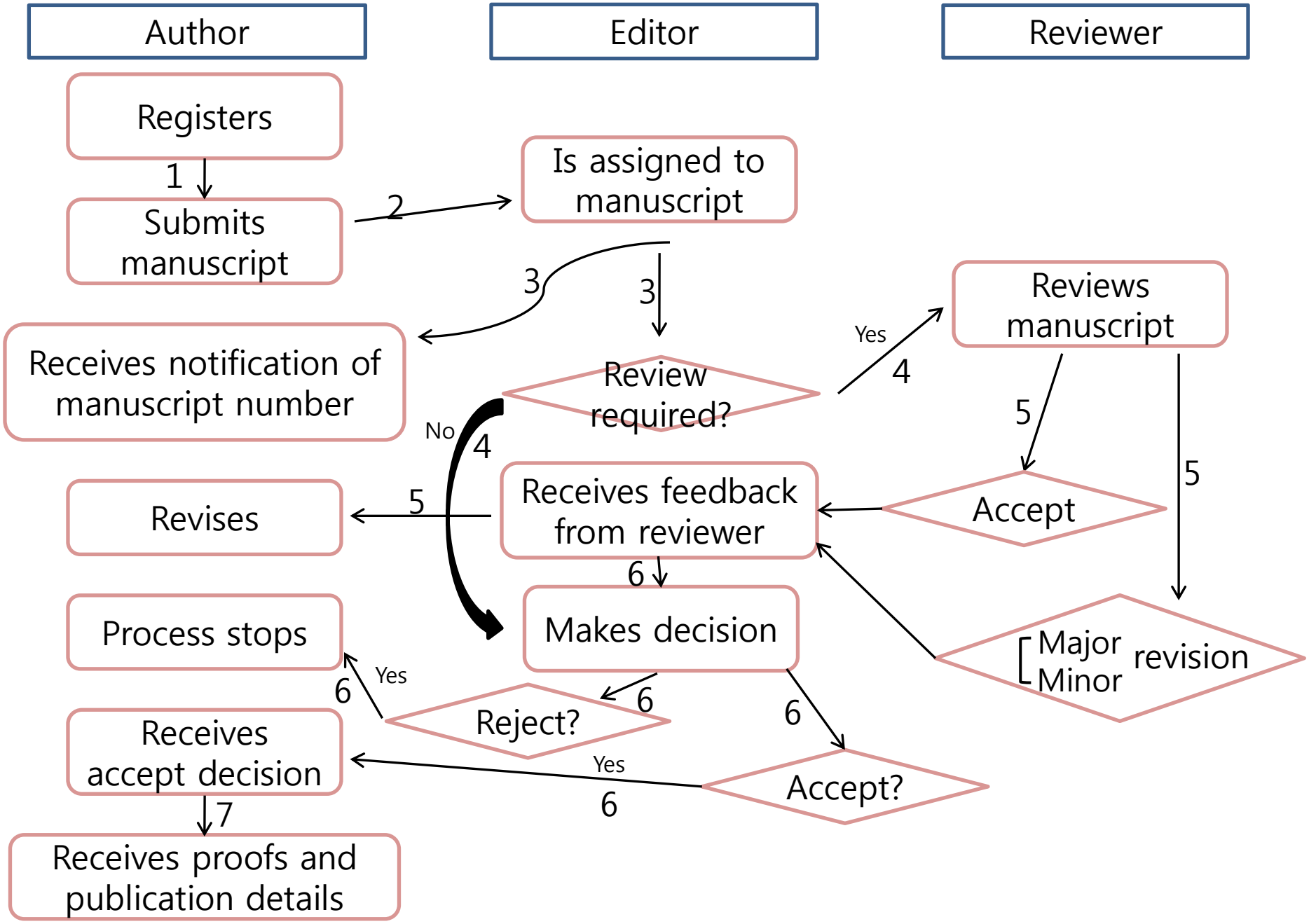

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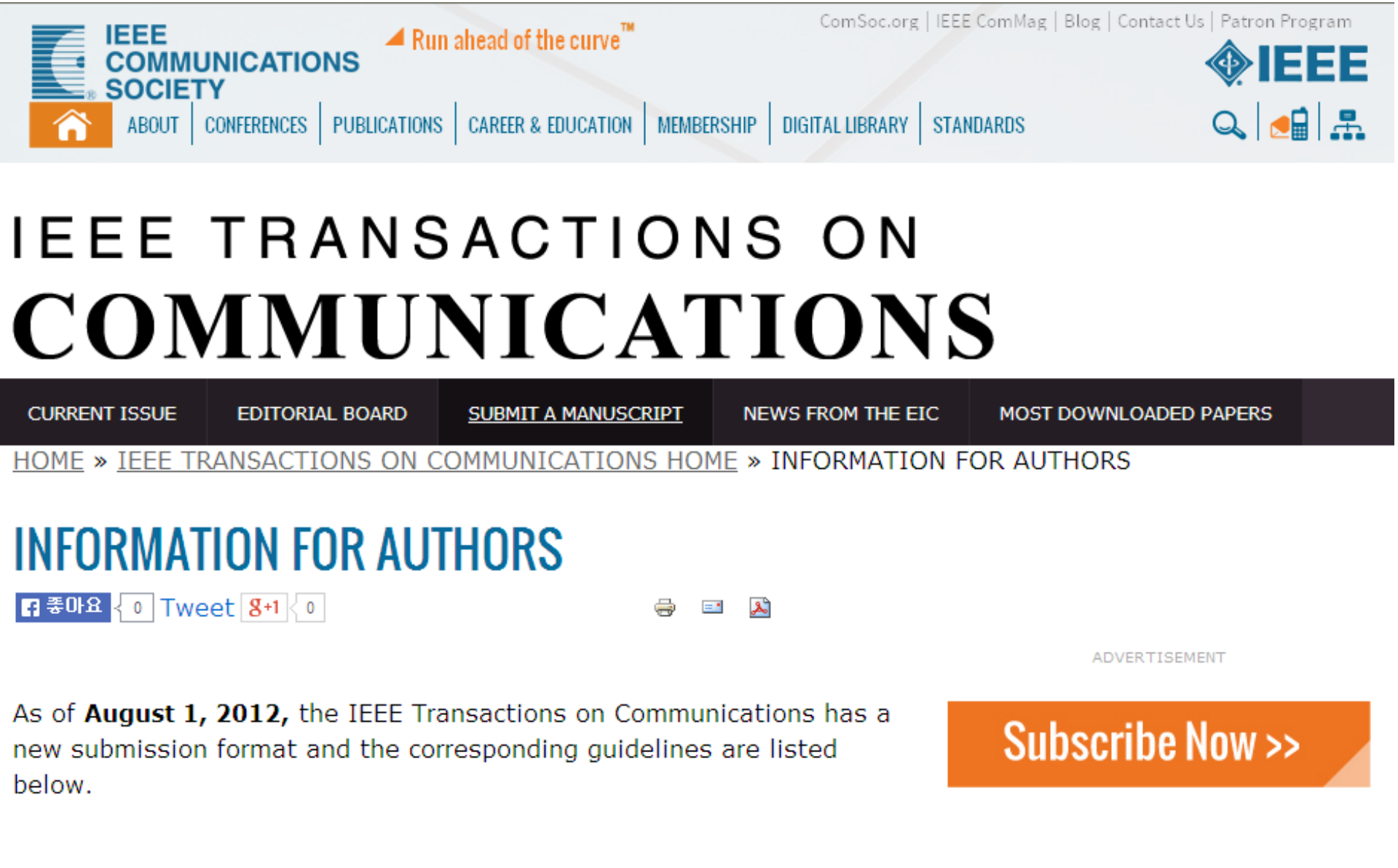

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Reviewer Recommendation and Comments for Manuscript Number HMT-D-13-00582

Improvement of Ingot Quality in a Large Cylindrical Ingot Casting of Steel Using Mathematical Modeling

Original Submission
Junseok Kim, Ph.D. (Reviewer 1)

Recommendation: No Recommendation | Overall Manuscript Rating (1 - 100)

No Recommendation
Accept
Minor Revision
Major Revision
Reject
Revise as Short Communication

Cancel | Save & S | er Attachments | Proof & Print | Proceed

or your convenience, and to take advantage of word processing ts, numbering), we suggest you use your regular word processing program (e.g., Microsoft Word, WordPerfect) when typing your review. You should then Co into the boxes provided. Click the **Save & Submit Later** button to save your comments and continue working.

Reviewer Instructions | View Tutorial

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Reviewer Confidential Comments to Editor

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```
For each question, please use the following scale to answer (place an x in the space provided):

"To what extent does the article meet this criterion?"

0       Fails by a large amount
1       Fails by a small amount
2       Succeeds by a small amount
3       Succeeds by a large amount
4       Not applicable

The subject addressed in this article is worthy of investigation.
```

For each question, please use the following scale to answer (place an x in the space provided):
"To what extent does the article meet this criterion?"
0 Fails by a large amount
1 Fails by a small amount
2 Succeeds by a small amount
3 Succeeds by a large amount
4 Not applicable

The subject addressed in this article is worthy of investigation.
0 __1 __2 __3 __4__

The information presented was new.
0 __1 __2 __3 __4__

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Is there a financial or other conflict of interest between your work and that of the authors?
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Please give a frank account of the strengths and weaknesses of the article:

Purpose of Peer Review

Peer Review serves two key functions:

- Acts as a filter: Ensures research is properly verified before being published

- Improves the quality of the research: rigorous review by other experts helps to sharpen key points and correct inadvertent errors

On Being Asked To Review

- ***Does the article you are being asked to review truly match your expertise?***

- ***Do you have time to review the paper?***

- ***Are there any potential conflicts of interest?***

A conflict of interest will not necessarily eliminate you from reviewing an article, but full disclosure to the editor will allow them to make an informed decision.

For example;
if you work in the same department or institute as one of the authors;

if you have worked on a paper previously with an author;

or you have a professional or financial connection to the article.

These should all be listed when responding to the editor's invitation for review.

Conducting the Review

Reviewing needs to be conducted confidentially, the article you have been asked to review should not be disclosed to a third party.
Normally you would be expected to evaluate the article according to the following:

- ***Originality***

Is the article sufficiently novel and interesting to warrant publication?

Is the research question an important one

You might wish to do a quick literature search using tools such as Scopus to see if there are any reviews of the area. If the research has been covered previously, pass on references of those works to the editor.

- ***Structure***

Is the article clearly laid out? Are all the key elements present: abstract, introduction, methodology, results, conclusions? Consider each element in turn:

• Title: Does it clearly describe the article?

• Abstract: Does it reflect the content of the article?

Where graphical abstracts and/or highlights are included, please check the content and if possible make suggestions for improvements.

• Introduction: Does it describe what the author hoped to achieve accurately, and clearly state the problem being investigated? Normally, the introduction should summarize relevant research to provide context, and explain what other authors' findings, if any, are being challenged or extended. It should describe the experiment, the hypothesis(es) and the general experimental design or method.

• Method: Does the author accurately explain how the data was collected? Is the design suitable for answering the question posed? Is there sufficient information present for you to replicate the research? Does the article identify the procedures followed? Are these ordered in a meaningful way? If the methods are new, are they explained in detail? Was the sampling appropriate? Have the equipment and materials been adequately described? Does the article make it clear what type of data was recorded; has the author been precise in describing measurements?

• Results: This is where the author(s) should explain in words what he/she/they discovered in the research. It should be clearly laid out and in a logical sequence. You will need to consider if the appropriate analysis has been conducted. Are the statistics correct? If you are not comfortable with statistics, please advise the editor when you submit your report. Interpretation of results should not be included in this section.

• Conclusion/Discussion: Are the claims in this section supported by the results, do they seem reasonable? Have the authors indicated how the results relate to expectations and to earlier research? Does the article support or contradict previous theories? Does the conclusion explain how the research has moved the body of scientific knowledge forward?

• Language: If an article is poorly written due to grammatical errors, while it may make it more difficult to understand the science, you do **not** need to correct the English. You should bring this to the attention of the editor, however.

- *Previous Research*

If the article builds upon previous research does it reference that work appropriately? Are there any important works that have been omitted? Are the references accurate?

- *Ethical Issues*

• Plagiarism: If you suspect that an article is a substantial copy of another work, please let the editor know, citing the previous work in as much detail as possible

• Fraud: It is very difficult to detect the determined fraudster, but if you suspect the results in an article to be untrue, discuss it with the editor

Communicating Your Report to the Editor

Once you have completed your evaluation of the article the next step is to write up your report. As a courtesy, let the editor know if it looks like you might miss your deadline.

Some journals may request that you complete a form, checking various aspects of the paper, others will request an overview of your remarks. Either way, it is helpful to provide a quick summary of the article at the beginning of your report. This serves the dual purpose of reminding the editor of the details of the report and also reassuring the author and editor that you have understood the article.

The report should contain the key elements of your review, addressing the points outlined in the preceding section. Commentary should be courteous and constructive, and should not include any personal remarks or personal details including your name.

Providing insight into any deficiencies is important. You should explain and support your judgment so that both editors and authors are able to fully understand the reasoning behind your comments. You should indicate whether your comments are your own opinion or are reflected by the data.

When you make a recommendation regarding an article, it is worth considering the categories the editor most likely uses for classifying the article.

a) Reject (explain reason in report)
b) Accept without revision
c) Revise (either major or minor)

Last, clearly identify what revision is required, and indicate to the editor whether or not you would be happy to review the revised article.

Highlights

Highlights are a short collection of bullet points that convey the core findings and provide readers with a quick textual overview of the article. These three to five bullet points describe the essence of the research (e.g. results or conclusions) and highlight what is distinctive about it. Highlights will be displayed in online search result lists, the contents list and in the online article, but will not (yet) appear in the article PDF file or print.

Author instructions:

Highlights should be submitted as a separate file in EES by selecting "Highlights" from the drop-down list when uploading files. Please adhere to the specifications below

Specifications:

Include **3 to 5 highlights**.

There should be a maximum of **85 characters**, including spaces, per highlight.

Only the **core results** of the paper should be covered.

Journal of Health Economics, Volume 29, Issue 4, July 2010, 524-535

Highlights

- We model two hospitals which have regulated prices and compete on quality.
- We examine changes in the level of information about hospital quality.
- Increasing information will increase quality if hospital costs are similar.
- Increasing information will decrease quality if hospital costs are very different.
- Welfare effects depend on ex-ante or ex-post assumptions about quality information.

논문의 질을 평가하는데 **IEEE** 저널은 다음의 기준이 사용된다.

- ✓ Is the topic appropriate for publication in these transactions?
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- ✓ Is the length of the paper appropriate? If not, recommend how the length of the paper should be amended, including a possible target length for the final manuscript. Are symbols, terms, and concepts adequately defined?

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- ✓ How would you rate the technical contents of the paper?
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- ✓ How would you rate the “literary” presentation of the paper?
- ✓ How would you rate the appropriateness of this paper for publication in this IEEE Transactions?

[논문관련] 이해관계(conflict of interest)란

Conference

이해관계(conflict of interest)란

이번에 논문을 투고하면서 conflict of interest disclosure를 작성하였는데, 바로 이 이해관계 또는 이해충돌(conflict of interest)에 관해 알아보는 시간을 가질까 한다. 《영어논문 작성과 발표요령》이라는 책을 참고하여 정리해보면 다음과 같다.

이해관계 또는 이해충돌(conflict of interest)이란 어떤 특정 연구와 관련하여 학술적 이해관계 외에 다른 재정적 또는 권리적 이해관계가 있을 때 생길 수 있다. 이런 이해관계를 가진 연구자는 연구에 있어서 잠재적인 편견을 가질 수 있고 객관성이 결여되므로 이에 따른 연구 위법행위를 할 수 있다.

그래서 ICMJE에서는 이해관계가 발생하는 유형으로 재정적인 관계(특정 단체로부터의 재정적 지원, 연구비 수혜, 자문, 주식보유 등), 사적인 관계(겸직 또는 지적재산권 등), 연구경쟁(경쟁 관계의 저자와 전문가, 심사자의 관계 등), 지적인 관심사 등을 들고 있다. 이러한 이해관계는 연구의 타당성과 진실성이 생명인 학술논문의 출판과 관련된 판단에 왜곡을 유발할 수 있으므로 특히 경계의 대상이 된다.

이러한 이해관계를 줄이기 위한 방법으로 여러 가지가 있는데, 가장 확실한 방법은 이러한 이해관계를 가능하면 많이 없애는 것이다. 이것이 안 될 경우 차라리 확실하게 밝혀야 한다. 따라서 논문이나 연구결과의 저자들은 해당 연구의 이해관계 여부를 밝힐 것(disclosure of interest)을 요구받는다. 즉, 이해관계가 있다는 사실보다 이를 숨기는 것이 문제가 되는 것이다. 또한 심사자의 입장에서 이해관계가 있다면 해당 논문이나 연구의 평가를 기피하는 것이 좋다. 그 외에 제삼자 평가(third-party evaluations)를 도입할 수도 있다고 한다. 가급적이면 ICMJE나 COPE 등의 웹사이트에 나와 있는 윤리 관련 부분을 고수하는 것이 바람직하다고 할 수 있겠다.

영어논문 작성과 발표요령

작가 송호영, 최병인|정혜자|KRICHNA KANDAR...
출판 EPUBLIC
발매 2010.04.01
리뷰보기

※ **참고 문헌:** 송호영 외. 《영어논문 작성과 발표요령》 EPUBLIC. 2010. 123쪽.

이해관계, conflictofinterest, COI, 이해충돌, 문학·책, 영어논문작성과발표요령

발행일 2013.06.18.

비누방울(pnukmed10) | 꿈꾸는 마법사 (첨단한방병...

내일의 아이들에게 선물할 지혜보따리

주저자란 제1저자와 교신저자를 의미함. 기타저자란 주저자에 속하지 않는 저자를 의미함. 이때 제1저자란 일반적으로 논문에 기재된 저자 중 첫 번째에 나오는 저자를 뜻함.

교신저자는 제1저자와 같을 수도 있고 다를 수도 있으며 “equally contributed”, “co-corresponding author” 등이 표시되어 잇는 경우 제1저자 및 교신저자는 다수일 수 있음.
논문의 저자이름에
(i) 제1저자 또는 교신저자가 표기되어 있는 경우,
(ii) 별표, 우체통 표시, 편지봉투 표시 등이 되어 있고 그 저자의 이메일 주소 등이 footnote 등에 제시되거나 hyper link로 연결되어 교신저자임을 명백히 알 수 있는 경우, 해당 저자를 교신저자로 함.

예1) 허균*, 김만중, 박지원 -> 허균이 제1저자 겸 교신저자 **(별도 증빙 필요)**
예2) 허균, 김만중, 박지원* -> 허균은 제1저자이고, 박지원은 교신저자 **(별도 증빙 필요)**
예3) 허균(제1저자), 김만중, 박지원(교신저자) -> 허균은 제1저자이고, 박지원은 교신저자
※ 단, 별표 등의 표시가 되어있는 경우, 해당 표시가 제1저자 또는 교신저자를 의미함이 명기된 해당 논문 또는 저널 페이지 등 관련 사실을 객관적으로 증명하는 증빙을 함께 제출 시에만 제1저자 및 교신저자임을 인정 가능(증빙 미제출시 기타저자로만 인정)

1. 논문에 제 1저자 또는 교신저자가 표시 ⇨ **해당 주저자 인정**

2. 제 1저자와 교신저자에 대해 논문에 아무런 표시가 없고 별도의 교신저자 증빙을 제출하지 않는 경우, 논문 저자 중 제일 앞에 있는 저자 ⇨ **제1저자 겸 교신저자로 인정**
※ 교신저자 증빙을 통하여 별도의 교신저자가 인정되는 경우, 제일 앞에 있는 저자는 제 1저자로만 인정

3. 여러명의 저자 중 특정 저자의 성명에만 교신저자 또는 교신저자 표시(이메일 주소 등)가 되어 있는 경우 ⇨ **교신저자로 인정**
※ 모든 저자 성명에 이메일 주소가 표기되어 있고 별도의 교신저자 증빙을 제출하지 않는 경우, 논문 저자 중 제일 앞에 있는 저자 ⇨ **제1저자 겸 교신저자로 인정**

4. 논문에 주저자 표시가 전혀 없거나 모든 저자의 이메일 주소가 표기되어 있을 경우, 다음의 교신저자 증빙을 하는 경우 ⇨ **교신저자 인정**

<교신저자 증빙> (논문 상에 교신저자 표기가 없는 경우, 교신저자 증빙을 통하여 보완적으로 교신저자가 인정됨)
◦ 교신저자를 증빙할 수 있는 경우 증빙서류 제시 ⇒ 교신저자를 증빙할 수 있는 저널과의 교신 이메일 제출※ 상기 이메일이 없는 경우 불인정

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[공지&뉴스] [보도자료] 서울대 대학원 영어논문작성법 강... 2015.04.22

[이용후기] 교정자와 너무 잘맞고 다른교수님들한테도 ... 송00 교수님

하리스코 단가 및 견적

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추천사

고려대학교 안남일 교수님
국내 최초로 학술연구논문 교정, 번역 사업을 개척한 "하리스코"가 지금까지 학술연구분야에 기여한 ...

고객만족센터 02_557_1810~1

평일 09:00 ~ 18:00
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프리젠테이션 클리닉

교수님들의 영어 프리젠테이션

해외저널 투고 지원

번역에서 교정, 편집,

이메일 개인비서

유능한 글로벌 비서를 채용하는

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where ρi and i for i=1,2 are density and viscosity of fluid i, respectively. There is no guarantee that the advected immersed boundary preserves area ~~in~~ over time. ~~An~~ A~~a~~rea conservation is an important issue in modeling free interface problems. If the area loss ~~happens~~occurs, it could increase ~~a~~ the local curvature of the interface and result~~s~~ in overestimating the surface tension force. An o~~O~~verestimated surface tension force induces an incorrect ~~wrong~~ velocity field which moves the interface to the wrong position.

Editage 교정

₩section{Numerical results} ₩label{numresults}

In this section, we perform the following numerical experiments: ~~containing~~ a convergence test,, ~~–~~a test of the stability of the proposed scheme, a ~~the~~ comparisonison ~~of~~the Dirichlet boundary and Neumann boundary conditions for spinoda~~l~~

~~–~~decompositions , ~~t~~and their effects on ~~he~~the increasing area in a rectangular domain and complex domain, and applications to models of biological membranes in confined domains, and to a passively moving droplet in a wavy channel.

표절검사

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Cover letter (I)

- 단독 논문일 경우

July 1, 2013
Journal A

Dear Editor:
Please consider the manuscript entitled "A numerical method for the Cahn--Hilliard equation" authored by Junseok Kim which I am submitting for consideration for publication in Journal A. This manuscript is new and is not being considered elsewhere.

Sincerely,
Junseok Kim
Professor
Department of Mathematics
Korea University

Cover letter (Ⅱ)

- 공동 논문일 경우

July 11, 2013
Journal A
Dear Editor:
Please consider the manuscript entitled "A conservative numerical method for the Cahn-Hilliard equation with Dirichlet boundary conditions in complex domains" authored by Yibao Li, Darae Jeong, Jaemin Shin, and Junseok Kim, which we are submitting for consideration for publication in Computers & Mathematics with Applications. We were fully involved in the study and preparation of the manuscript and that the material within has not been and will not be submitted for publication elsewhere. We look forward to hearing from you with regard to the status of this manuscript and welcome your esteemed comments. The corresponding author's information follows: Email is cfdkim@korea.ac.kr and website is ttp://math.korea.ac.kr/~cfdkim/
Sincerely,
Junseok Kim
Professor
Department of Mathematics
Korea University

보완된 Cover letter (III)

June 19, 2013

Computational Materials Science

Dear Editor:

Please consider the manuscript entitled "**Physical, mathematical, and numerical derivations for the Cahn-Hilliard equation**" authored by Dongsun Lee, Joo-Youl Huh, Darae Jeong, Jaemin Shin, Ana Yun, and Junseok Kim, which we are submitting for consideration for publication in Computational Materials Science. The *novelty and significance* of our paper lies in reviewing physical, mathematical, and numerical derivations in a unified way for the Cahn-Hilliard equation. We expect that this review will be helpful for the readership of Computational Materials Science. We look forward to hearing from you at your earliest convenience

The corresponding author' information follows: Email is cfdkim@korea.ac.kr and website is http://math.korea.ac.kr/~cfdkim/

논문 투고하기 전 Check List (I)

체크(V)	내 용
	논문의 목적이 분명하게 기술되어 있는가? Is the goal of the paper clear?
	투고할 저널이 적절한가? 적절하지 않은 저널에 투고 할 시 시간을 낭비할 수 있다.
	인용이 올바르게 되었는지 확인
	인용되지 않은 참고 문헌은 삭제
	참고 문헌 알파벳 순서대로 또는 인용 순서대로 정렬
	여러 개의 인용 시 순서 확인 ([3, 11]처럼 순서 확인)
	사사 표시 확인
	저자 이름 스펠링 표기법 확인(W.F or W. F.)

논문 투고하기 전 Check List (Ⅱ)

체크(V)	내 용
	교신저자표시(Corresponding author)
	저자 소속 주소 확인
	본문 단어 오타 확인
	모든 Figure에 대하여 설명하였는지 확인
	모든 Table에 대하여 설명하였는지 확인
	참고문헌 저널명 약자 확인
	투고하는 저널의 문헌을 세 개 이상 인용하였는가?
	투고하는 저널의 형식을 최근 발표된 3개 정도의 논문을 참고한다. 제목, Fig 약자, 주소, Reference 형식 등
	Cover letter에 투고하는 저널명을 맞게 사용하였는가?
	참고문헌의 대소문자 확인 (특히 book의 포멧확인)
	식, 그림, 테이블에서 중복 label은 없는가?

논문 투고하기 전 Check List (Ⅲ)

체크(V)	내 용
	다른 논문에서 가져온 표현을 그대로 사용했는가? 표절을 방지하기 위해서 원문과 너무 비슷하게 바꿔 쓰지 말아야 한다. 자신의 어휘로 인용할 구절을 더욱 명확하고 선명하게 표현하고 출처를 밝히면 표절을 방지할 수 있다. [5] 중요) 꼭 확인하고 논문 전체를 다시 쓸 것
	방정식이 칸을 넘지 않게 한다.
	Cover letter에 논문의 significance와 novelty를 언급했는가?
	Abstract에는 포함될 내용들이 모두 들어있는가?
	So 라는 표현은 구어적인 느낌이 강하므로 다른 표현 (therefore, thus, hence)으로 바꾼다.

논문 투고하기 전 Check List (Ⅳ)

체크(V)	내 용
	Didn't나 Let's 등 구어체 언어를 사용하지 않았는가?
	전화번호, Fax 번호, 주소는 정확하게 기재되었는가?
	Numerical scheme이 포함되는 경우 convergence test는 수행하였는가?
	Highlights와 Graphical Abstract도 논문평가의 한 요소 중에 하나이다.
	저널의 author's guide에 다음과 같은 사항이 있는지 확인하자. (1) Figures should not be placed in between the text. It should be provided at the end of references. (2) Double line spacing for the manuscript. (3) 학위논문의 일부 내용을 저널에 제출시 다음과 같은 문구를 논문사사에 넣는다. This work is based on the author's Ph.D. thesis [1].

Reviewer 선정 방법:

보통 3명에서 많게는 8명 정도의 reviewer의 리스트를 논문 투고할 때제공해야 한다. 따라서 주로 투고예정의 연구논문에 인용된 논문의 저자 위주로 찾는 것이 좋다.왜냐하면 본인의 논문을 인용하였기 때문에 논문 리뷰에 긍정적일 수 있기 때문이다. 또한, Reviewer의 정확한 이메일 주소와 소속을 미리 조사하도록 한다.

Editor 선정 방법:

저널의 분야마다 editor들이 있다. editor를 굳이 선택해야 하는 것은 아니지만 좀 더 빠른 논문 심사 과정을 위해서는 투고하는 논문 분야의 editor를 선택하는 것이 좋다.

Technical Check in Progress

투고한 논문이 저널 규정에 맞게 작성이 되지 않은 경우 심사를 받기 전 저널의 편집장으로부터 다음과 같은 메일을 받게 된다.

You are welcome to resubmit your manuscript. Should you do so, please ensure that every aspect of the manuscript is in accordance with the Guide for Authors. You must also submit a separate list of responses to the problems that were raised, under the submission item "Responses to technical check results". We regret that without a completed "Responses" sheet, your manuscript will not be further processed.

PLEASE NOTE: resubmission is not a guarantee that your paper will subsequently proceed to the peer review process, which is a decision to be made at the sole discretion of the Editor.

Yours sincerely,

Comments:

1) Full contact addresses of only 3-5 potential reviewers including their e-mail addresses should be provided.

2) Graphical abstract should be structured under the heading "Graphical abstract".

Graphical abstract

The effect of h_∞ on the finger shape for Marangoni-driven flow. (a) $h_\infty = 0.175$, (b) $h_\infty = 0.20$, and (c) $h_\infty = 0.225$. The evolution of the fluid front is from bottom to top. The times are at $t = 1250$, 1500, 1875, and 2500.

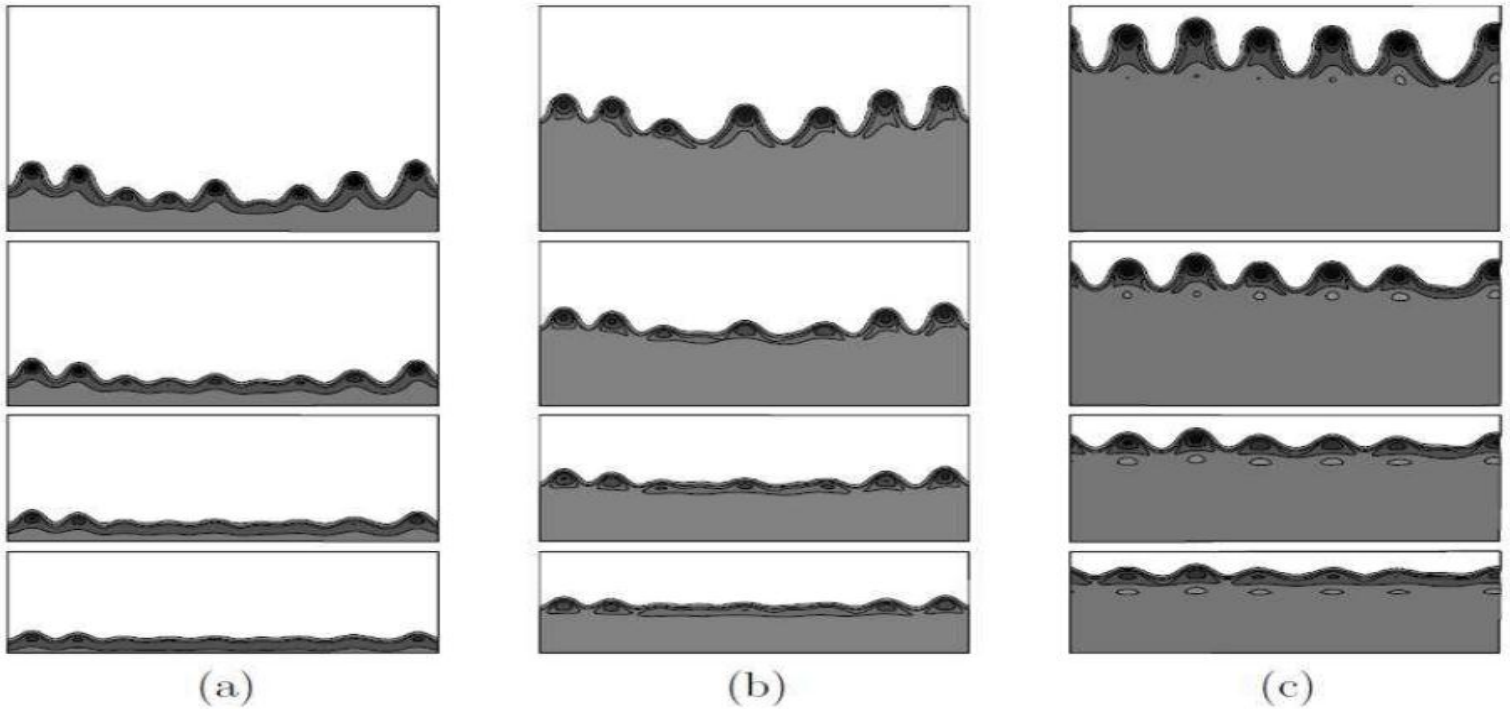
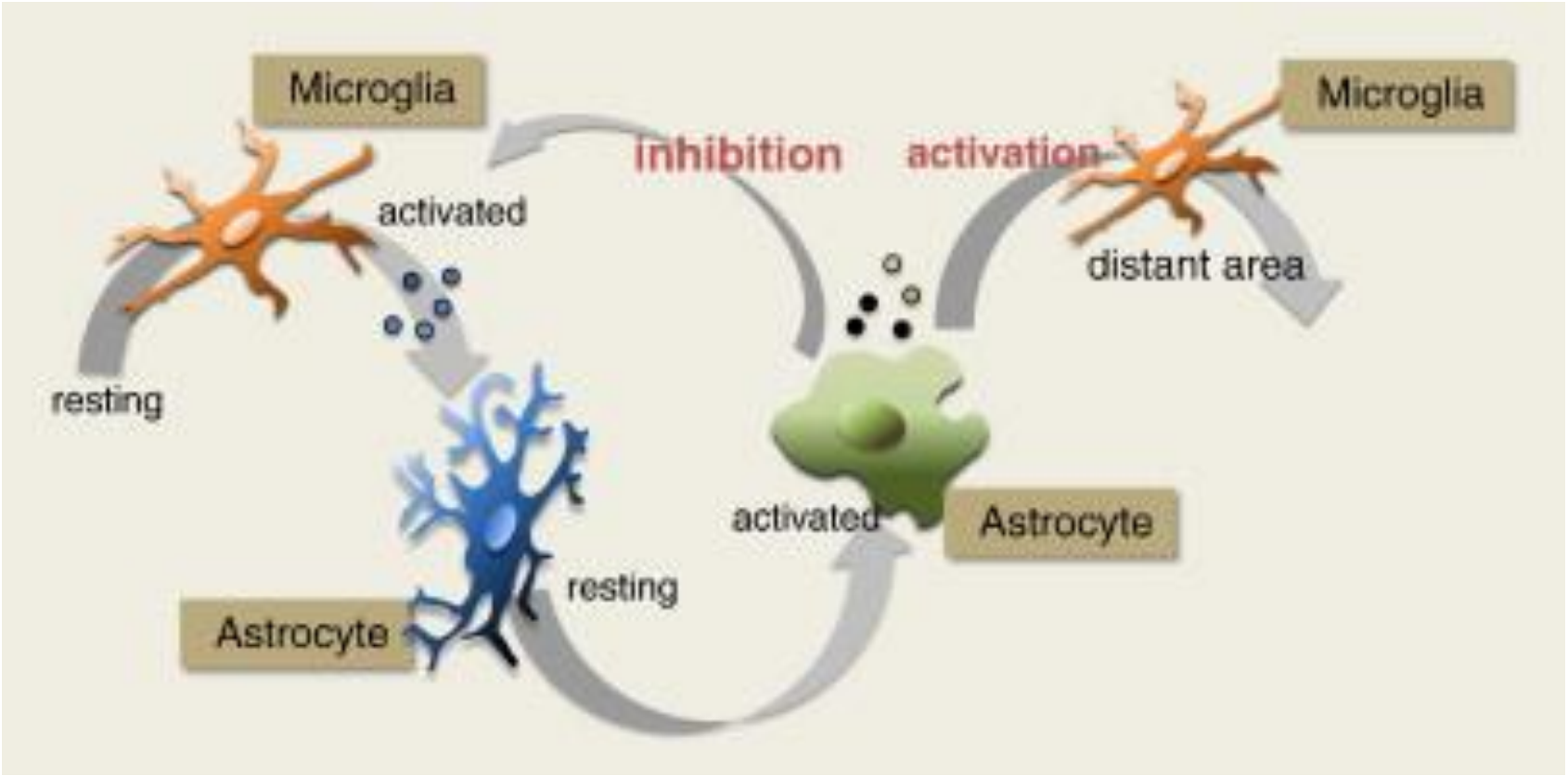


그림 14.3: Graphical abstract

"Cross talk between activation of microglia and astrocytes in pathological conditions in the central nervous system"

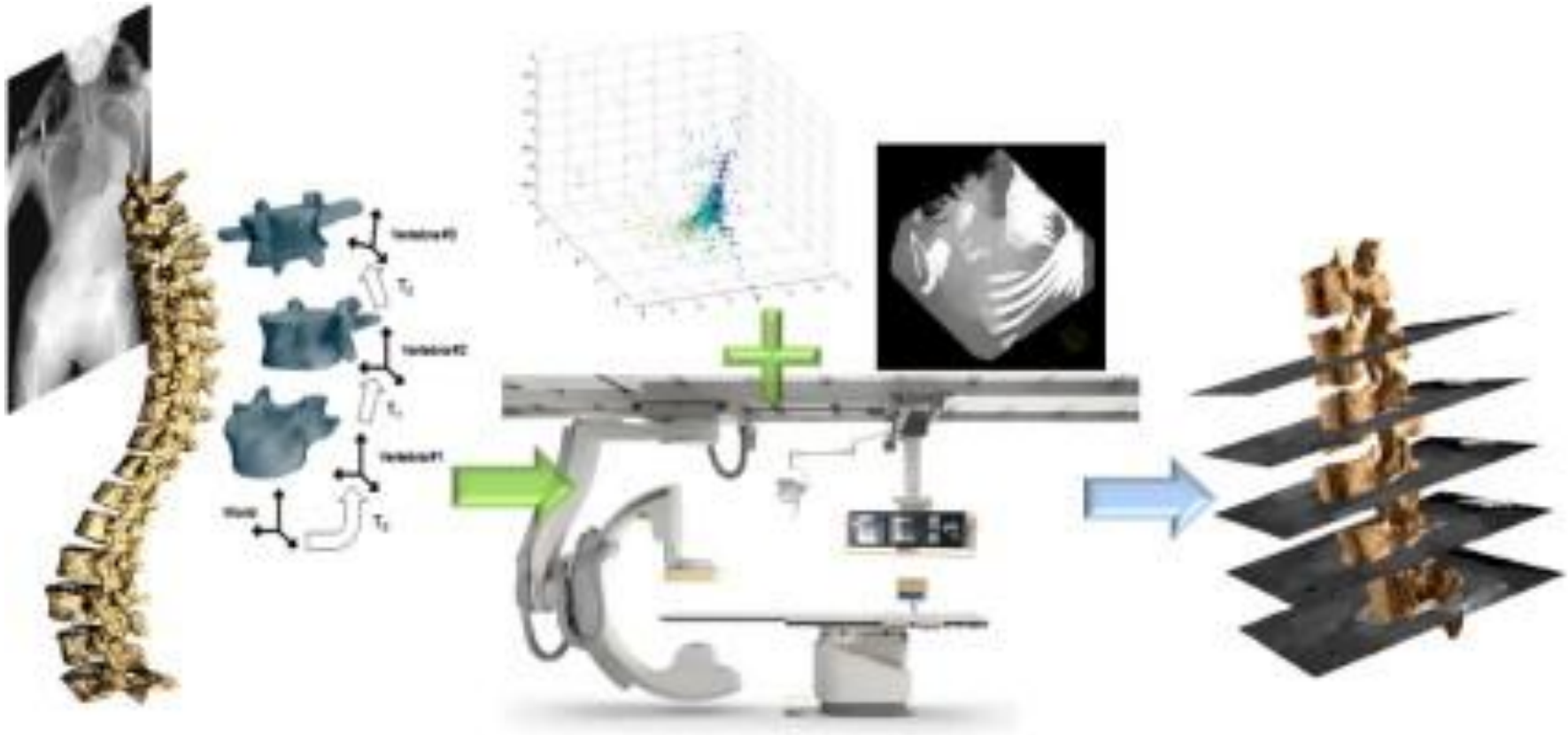
W. Liu, Y. Tang, J. Feng,
Life Sciences, Volume 89, Issues 5-6, 1 August 2011, Pages 141-146.



"Automatic inference of articulated spine models in CT images using high-order Markov Random Fields"

Samuel Kadoury, Hubert Labelle, Nikos Paragios

Medical Image Analysis, Volume 15, Issue 4, August 2011, Pages 426-437.



Thank you for your recent submission to Applied Mathematics and Computation.

However, before we can send your manuscript out for review, please note that we would like you to make the following changes/corrections:

1) Figure captions must be provided on separate sheet.

List of Figures

Figure 1. A double well potential, $(\phi^2 - 1)^2/4$.

Figure 2. Surface tension of nonlinear and linear cases with $\psi_\infty = 1$, $\sigma_0 = 1$, and $\beta = 1$.

Figure 3. ϕ, ψ, and p are defined at the cell center. u and v are defined at the cell edges.

Figure 4. Overlapped numerical solutions of the ordered parameter ϕ and the surfactant concentration (a) with and (b) without $\mathcal{I}$ at the steady state. Note that we overlap equilibrium profile.

Figure 5. Overlapped contour plots of order parameter ϕ at four levels (a) with, (b) without $\mathcal{I}$ at the steady state. Note that we overlap the steady state of without surfactant to compare results.

투고 후 곧바로 reject인 경우 (Ⅰ)

- 논문을 투고할 때는 우선 자신이 투고하고자 하는 논문과 저널의 성격이 맞는지 확인하여야 한다. 다음은 성격이 맞지 않는 저널에 논문을 투고하였을 경우 편집자의 답변이다.

Thank you for submitting your paper to A journal. The pre-review process has now been completed. It has been found that, unfortunately, the paper is not appropriate for this journal. We believe that the material presented would be much more appreciated in a mathematics oriented journal. Consequently, I suggest that you resubmit your paper to a more appropriate publishing medium. Thank you for your interest in and support of A journal.

투고 후 곧바로 reject인 경우 (Ⅱ)

- 다음은 editor의 공손하고 형식적인 editor reject 의 예이다. 이런 경우 다시 한 번 투고할 논문을 전반적으로 검토하고 다른 저널에 투고하면 된다.

> We have examined your paper, and conclude that it is not suitable for this Journal. It is our consensus that a specialized journal in this area would bring your paper to the attention of a more interested audience. This is not a judgment on the technical quality of your manuscript.

일반적으로 상위저널에 논문을 게재하긴 힘들지만 많은 경우에 reviewer와 editor에게 달린 거라서 같은 내용의 논문이 하위저널에서 reject 될 수도 있고 반면에 상위저널에서 게재가 될 수도 있다.

Review 기간이 너무 오래 걸릴 때 (6개월 이상) 보내는 메일

- 독촉 메일

Dear Editor

We submitted a manuscript six months ago. We would like to know what is the current status of our manuscript. The manuscript number is MATH01234567.
We are looking forward to your reply.
Thank you.

Sincerely yours,
J.S. Kim

Review 기간이 너무 오래 걸려서 투고한 논문을 철회 (Withdraw) 할 때 보내는 메일

Dear Editor

We wish to withdraw our manuscript because it took so long time since we submitted our manuscript. The manuscript number is MATH01234567. We are looking forward to your reply.

Thank you.

Sincerely yours,
J.S. Kim

Revision

- Revision 기간: Revision 기간은 각 논문의 경우마다 다르다. 어떤 경우에는 한 달, 길게는 6개월을 부여하기도 한다. 아주 minor한 경우에는 바로 답변을 보내주어도 상관없지만 major revision인 경우에는 시간을 들여 정성껏 꼼꼼히 코멘트에 대해서 적절한 답변과 논문을 수정하여 제출해야 한다.
- Revision reply letter: Revision Letter에 첨부된 reviewer들의 질문과 코멘트 내용에 따라 논문을 수정하고 reply letter에 수정사항에 대하여 기술한다.
- Revision 후에 Acknowledgements에 Referee에게 감사 표현하기

- **The authors thank an anonymous referee for very useful comments on this paper.**
- **The authors also wish to thank the anonymous referee for the constructive and helpful comments on the revision of this article.**
- **The authors also wish to thank the reviewers for the constructive and helpful comments on the revision of this article.**
- **The authors are grateful to the anonymous referees whose valuable suggestions and comments significantly improved the quality of this paper.**

Revision 제출할때 Check List

체크(V)	내 용
	Acknowledgements에 Referee에게 감사 표현하기
	제출할 파일들이 최근 업데이트 된 것인가?
	논문 내용을 수정할 때 관련된 부분들도 같이 수정을 했는가?
	Acknowledgements에 연구비 지원 기관과 과제 번호가 맞는가?
	전문 영문교정을 받은 경우: Reply letter에 “This manuscript has been edited by a professional scientific English language editing service.” 라 쓴다.
	Revision version에서 최초 제출한 원고에 있었던 참고문헌이 삭제 되었는지 확인한다.

Revision cover letter

July 14, 2013
Journal A

Dear Editor:
According to reviewers' comments, we have revised our manuscript. We have enclosed the responses (which summarize the revisions and corrections) to reviewers.
We are looking forward to hearing from you.

Sincerely,
Junseok Kim
Professor
Department of Mathematics
Korea University

Revision reply letter (I)

Department of Mathematics

Junseok Kim
Department of Mathematics
Korea University,
Seoul 136-701,
Republic of Korea

July 10, 2012

Computers and Mathematics with Applications

Dear Editor

First of all, thank you very much for your detailed and thoughtful comments.
According to reviewer's comments which our manuscript could be stronger, we have revised this manuscript entitled "A conservative numerical method for the Cahn-Hilliard equation with Dirichlet boundary conditions in complex domains".

The followings are the summary of the revisions.

Revision reply letter (Ⅱ)

Q1. My biggest issue with the content of this paper is that no where in section 2 is it discussed how the Dirichlet BCs are dealt with or why this technique is special for Dirichlet BCs. As this is what is to distinguish this method, it should certainly be discussed and with detail.

Answer: In Section 2, we explained how the Dirichlet BCs were dealt with and why this technique was special for the Dirichlet BCs. For more details, please refer to Section 2 in the revised paper.

Q2. The possible applications (and their importance) of the CH model with Dirichlet boundary conditions should be highlighted and discussed in the introduction so that the reader understands why this would be useful.

Answer: In introduction, we presented the possible application and their importance of the CH model with Dirichlet BCs as followings:

The possible applications of the CH model with Dirichlet boundary conditions are a non-wetting droplet dynamics in a channel, a red blood cell in capillary blood vessels, and deformation of biological cell morphology in a confined domain [39-52].

Revision reply letter (Ⅲ)

[39] Y. Liu, W.K. Liu, Rheology of red blood cell aggregation by computer simulation, Journal of Computational Physics 220 (2006) 139-154.

[40] W.K. Liu, Y. Liu, D. Farrell, L. Zhang, X.S. Wang, Y. Fukui, N. Patankar, Y. Zhang, C. Bajaj, J. Lee, J. Hong, X. Chen, H. Hsu, Immersed finite element method and its applications to biological systems, Computer Methods in Applied Mechanics and Engineering 195 (2006) 1722-1749.

[41] J. Zhang, P.C. Johnson, A.S. Popel, Red blood cell aggregation and dissociation in shear flows simulated by lattice Boltzmann method, Journal of Biomechanics 41 (2008) 47-55.

[42] C. Migliorini, Y. Qian, H. Chen, E.B. Brown, R.K. Jain, L.L. Munn, Red blood cells augment leukocyte rolling in a virtual blood vessel, Biophysical Journal 83 (2002) 1834--1841.

[43] C. Sun, C. Migliorini, L.L. Munn, Red blood cells initiate leukocyte rolling in postcapillary expansions: a lattice Boltzmann analysis, Biophysical Journal 85 (2003) 208--222.

[44] C. Sun, L.L. Munn, Particulate nature of blood determines macroscopicrheology: a 2-D lattice Boltzmann analysis, Biophysical Journal 88 (2005) 1635--1645.

[45] R.M. MacMeccan, J.R. Clausen, G.P. Neitzel, C.K. Aidun, Simulating deformable particle suspensions using a coupled lattice-Boltzmann and finite element method, Journal of Fluid Mechanics 618 (2009) 13--39.

[46] H. Zhao, A.H.G. Isfahani, L.N. Olson, J.B. Freund, A spectral boundary integral method for flowing blood cells, Journal of Computational Physics 229 (2010) 3726-3744.

[47] P. Bagchi, P.C. Johnson, A.S. Popel, Computational fluid dynamic simulation of aggregation of deformable cells in a shear flow, Journal of Biological Engineering 127 (2005) 1070-1080.

[48] C.D. Eggleton, A.S. Popel, Large deformation of red blood cell ghosts in a simple shear °ow, Physics of Fluids 10 (1998) 1834-1845.

Revision reply letter (Ⅳ)

[49] P. Bagchi, Mesoscale simulation of blood flow in small vessels, Biophysical Journal 92 (2007) 1858-1877.
[50] T. Ye, H. Li, K.Y. Lam, Modeling and simulation of microfluid effects on deformation behavior of a red blood cell in a capillary, Microvascular Research 80 (2010) 453-463.
[51] A. Jafari, P. Zamankhan, S.M. Mousavi, P. Kolari, Numerical investigation of blood flow. Part II: In capillaries, Communications in Nonlinear Science and Numerical Simulation 14 (2009) 1396-1402.
[52] N. Minc, D. Burgess, F. Chang, Influence of cell geometry on division-plane positioning, Cell 144 (2011) 414–426.

Q3. In the introduction, the logic of the derivation of equations 1-4 is a bit backward. One should start with mass conservation, then the definition of the flux, then the computation of the chemical potential.

Answer: Following the reviewer's comment, we revised the introduction. Please refer to Section 1 in the revised paper.

Q4. Additionally, a sentence or two stating the system is a gradient flow and what that means before the energy time derivative calculation would help to motivate why the calculation is shown and what is meant throughout the rest of the paper by gradient stability.

Revision reply letter (V)

Answer: Following the reviewer's comment, we added several sentences in Section 1 as follows: "The CH equation can be derived from a constrained gradient flow in the H^{-1} Hilbert space and it guarantees that the total free energy $E(\phi)$ is non-increasing in time t[3]." And in Section 2.1, we showed the gradient stability with the definition of gradient flow as following : "The unconditionally gradient stability of the discrete system is proved in [53-56]. We define the discrete energy functional:

$$\mathcal{E}_h(\phi^n) = \sum_{i=1}^{N_x}\sum_{j=1}^{N_y}\left[h^2 F(\phi_{ij}^n) + \frac{\epsilon^2}{2}\left((\phi_{i+1,j}^n - \phi_{ij}^n)^2 + (\phi_{i,j+1}^n - \phi_{ij}^n)^2\right)\right]$$

In [53,54], Eyre proved that if ϕ^{n+1} is a numerical solution of Eqs. (7) and (8) with a given ϕ^n then $\mathcal{E}_h(\phi^{n+1}) \leq \mathcal{E}_h(\phi^n)$. The decrease of the discrete total energy functional implies the pointwise boundedness of the numerical solution (please refer [56] for more details and proof)."

[53] P.C. Fife, Models for phase separation and their mathematics, Electronic Journal of Differential equations 2000 (2000) 1–26.

[54] D.J. Eyre, Computational and mathematical models of microstructural evolution, in The Material Research Society, Warrendale, PA, 1998.

[55] D.J. Eyre, An unconditionally stable one-step scheme for gradient systems, Unpublished article. www.math.utah.edu/~eyre/research/methods/stable.ps, 1998.

[56]J. Kim, Phase-field models for multi-component fluid flows, Commun. Comput. Phys. 12(3) (2012) 613-661.

Revision reply letter (VI)

Q5. The first sentence of section 2 states "we propose a new conservative numerical algorithm for solving the Cahn-Hilliard equation with Dirichlet boundary conditions in rectangular and complex domains." However, there does not seem to be anything novel about the approach on rectangular domains, thus the statement seems too strong.

Answer: First, we modified the first sentence in section 2 as "we propose a new conservative numerical algorithm for solving the Cahn-Hilliard equation with Dirichlet boundary conditions in complex domains." And our method is slightly different from the existing method in treating boundary condition for chemical potential on rectangular domains. Since we let the discrete boundary points be located a half space step away from the true boundary points. It will be shown that this treatment of boundary points make the solution algorithm be considerably simpler than standard treatments.

Q6. In section 2.2, the first equation should be made more readable, i.e. split into more lines, and a comment leading the reader to understand where the last equal sign comes from should be included.

Answer: Following the reviewer's comment, we split our derivation of the formulas into more lines. Such as:

Revision reply letter (Ⅶ)

$$
\begin{aligned}
0 &= \sum_{i=1}^{N_x}\sum_{j=1}^{N_y}\frac{\phi_{ij}^{n+1}-\phi_{ij}^{n}}{\Delta t} = \sum_{i=1}^{N_x}\sum_{j=1}^{N_y}\Delta_d \mu_{ij}^{n+1} \\
&= \sum_{j=1}^{N_y}\sum_{i=1}^{N_x}\left(\frac{\mu_{i+1,j}^{n+1}-\mu_{ij}^{n+1}}{h^2}-\frac{\mu_{ij}^{n+1}-\mu_{i-1,j}^{n+1}}{h^2}\right) \\
&\quad + \sum_{i=1}^{N_x}\sum_{j=1}^{N_y}\left(\frac{\mu_{i,j+1}^{n+1}-\mu_{ij}^{n+1}}{h^2}-\frac{\mu_{ij}^{n+1}-\mu_{i,j-1}^{n+1}}{h^2}\right) \\
&= \sum_{j=1}^{N_y}\left(\frac{\mu_{N_x+1,j}^{n+1}-\mu_{N_x j}^{n+1}}{h^2}-\frac{\mu_{1j}^{n+1}-\mu_{0j}^{n+1}}{h^2}\right) \\
&\quad + \sum_{i=1}^{N_x}\left(\frac{\mu_{i,N_y+1}^{n+1}-\mu_{iN_y}^{n+1}}{h^2}-\frac{\mu_{i1}^{n+1}-\mu_{i0}^{n+1}}{h^2}\right),
\end{aligned}
$$

Where we have used Eq. (7) and telescoping cancellation. Furthermore, as can be observed that due to the telescoping cancellation, the last equal sign comes.

Q7. Also, in this same equation, the sub-index of "0" seems to have no meaning in this paper, so please be consistent in your numbering or give a definition of what you are referring to.

Revision reply letter (Ⅷ)

Answer: We added that definition in Section 2 as following:

$$\partial\Omega^h = \{(x_0, y_j), (x_{Nx+1}, y_j), (x_i, y_0), (x_i, y_{Ny+1}) |\ 1 \le i \le N_x,\ 1 \le j \le N_y\}$$

Please see Figure 2.

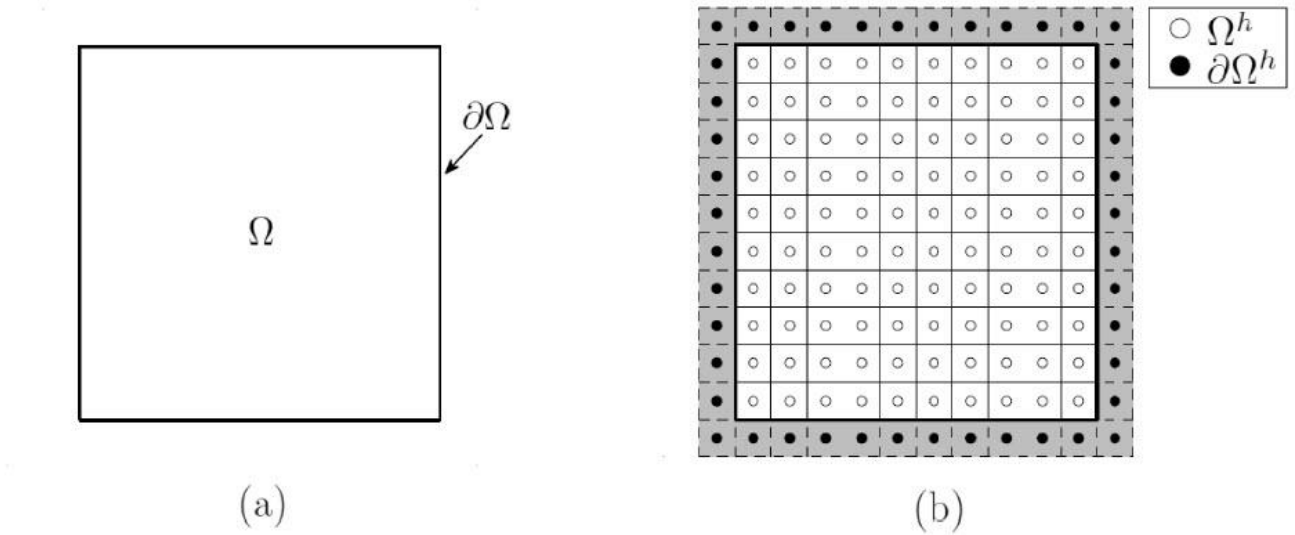


Fig. 2. (a) Domain Ω with boundary $\partial\Omega$ and (b) discrete domain Ω^h with discrete boundary $\partial\Omega^h$.

Also the discrete boundary condition was defined as

$$\phi^n_{0j} = g(a, y_j),\ \phi^n_{N_x+1,j} = g(b, y_j),\ \phi^n_{i0} = g(x_i, c),\ \phi^n_{i,N_y+1} = g(x_i, d)$$

Revision reply letter (IX)

Q8. The caption for Figure 5 needs to be greatly enhanced. Also, I think it is examples of ₩mu^{₩tilde}, not just ₩mu.

Answer: We enhanced the caption of Figure 6 in this revised paper. Also we replaced ₩mu by ₩mu^{₩tilde}.

$$\begin{cases} (a)\ \tilde{\mu}_{ij}^{n+1} - \mu_{i+1,j}^{n+1}, \\ (b)\ \tilde{\mu}_{ij}^{n+1} = (\mu_{i\,|\,1,j}^{n+1} + \mu_{i,j\,|\,1}^{n+1})/2, \text{and} \\ (c)\ \tilde{\mu}_{ij}^{n+1} = (\mu_{i+1,j}^{n+1} + \mu_{i,j+1}^{n+1} + \mu_{i,j-1}^{n+1})/3. \end{cases} \tag{12}$$

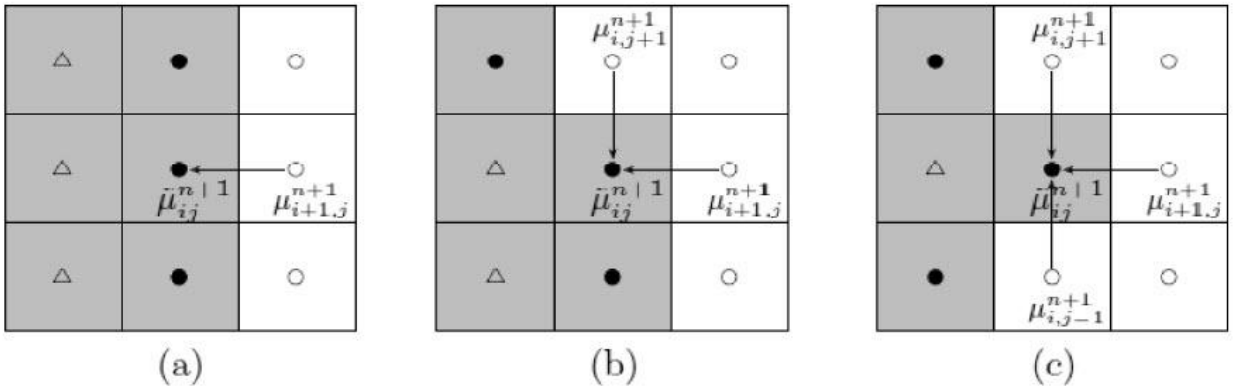


Fig. 5. Examples of discrete boundary point μ_{ij}^{n+1} in a complex domain. Each equation corresponding to each label is presented in Eq. (12).

Revision reply letter (X)

Q9. In section 3.1, I would think a better way to look at convergence is to consider a solution from a very fine grid as "truth" and look at errors against that. This would also give you more points to see for error reduction to help establish if you are seeing the asymptotic regime.

Answer: With the mentioned method, we considered the convergence test in section 3.1. Second-order accuracy with respect to space is observed, as expected from the discretization.

Table 1
Error and convergence results with various mesh grids. Here, $\Delta t = 6.25\text{E-}6$.

Grid	64×64	128×128	256×256
l_2-error	3.90E-3	8.92E-4	2.07E-4
Rate	2.13	2.11	

Q10. While a table showing spatial convergence is shown, the level of time accuracy is stated but never shown.

Answer: We considered a test to show the first-order accuracy for time with the same method as that mentioned in Q9. For more details, please refer to setion3.1.

Revision reply letter (X I)

Table 2
Error and convergence results with various time steps. Here, a 256×256 mesh grid is used.

Δt	6.25E-4		3.125E-4		1.563E-4
l_2-error	3.30E-2		1.61E-2		7.21E-3
Rate		1.03		1.16	

Q11. In references [20-22], this scheme has been shown to be unconditionally stable in the sense that the energy will always decrease no matter the time step. Thus section 3.2 is a bit of misnomer, since to show the scheme is stable in this sense requires showing the energy level over time, not looking at the final solution.

Answer: To demonstrate the stability of this scheme, we re-plotted the results by putting the evolution for spinodal decomposition with large time step, total energy and mass together.

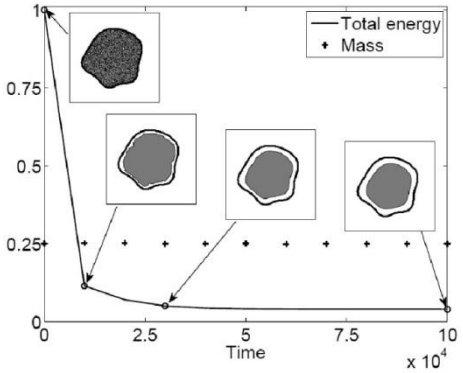


Fig. 9. The temporal evolution with large time step $\Delta t = 10000$.

Revision reply letter (XII)

Q12. At the end of section 3.4, reference is made to "phase membrane" and "plasma membrane" without motivation. It seems to be a pre-cursor to section 3.5. Such phrases should probably be introduced in the introduction when discussing possible applications.

Answer: It is right. We moved that sentences and added the description of phase and plasma membrane in the introduction.

Q13. In section 3.6, you should compare and contrast your method with adaptive finite elements, i.e. required degrees of freedom, computational time, etc.

Answer: Since we don't have the source code of the adaptive finite element method, it is difficult to directly compare the computational times, or other numerical measures. In the future work, we will compare our proposed method with adaptive finite element method and previous model in [**].

[**]A. Carlson, M. Do-Quang, G. Amberg, Droplet dynamics in a bifurcating channel, Int. J. Multi- phase Flow, 36 (2010) 397–405.

Revision reply letter (XIII)

Q14. Reference 21 should be filled in

Answer: We filled in reference 21 as followings.

[21] D.J. Eyre, An unconditionally stable one-step scheme for gradient systems, Unpublished article.

www.math.utah.edu/$₩sim$eyre/research/methods/stable.ps, 1998.

Q1. [Page 1] After Keywords: It will be nice if mathematical Subject codes based on AMS classifications be given.

Answer: We presented mathematical subject codes based on AMS classifications.

Q2. [Page 11] Section, It will be more useful if the corresponding references in the literature for the text examples be given.

Answer: This example is newly coined for convergence test in complex domain. The reason why we chose that complex domain and initial configuration is that $g(x)$ is always 0 in the boundary. It is simply to consider the convergence test.

Q3. [Pages 18-19] This referee would like authors pay attention to the following references which can be helpful for the readers of this journal.

Answer: Following the reviewer's comment, we referred to these papers and cited them.

Ms. Ref. No.: EJMFLU-D-13-00026R1
Title: Buoyancy-driven mixing of multi-component fluids in two-dimensional tilted channels European Journal of Mechanics - B/Fluids

Dear Prof. Junseok Kim,

I have now heard from the referees about your revised paper "Buoyancy-driven mixing of multi-component fluids in two-dimensional tilted channels" which you submitted some time ago for publication in the European Journal of Mechanics - B/Fluids.

The referees are happy with the revision and recommend publication.

Below are comments from the editor and reviewers.

Thank you for submitting your work to European Journal of Mechanics - B/Fluids.

With kind regards,

Frederic Dias
Editor-in-Chief
European Journal of Mechanics - B/Fluids

Comments from the editors and reviewers:

Reviewer #1: The authors have discussed my questions satisfactorily in the revised manuscript and their rebuttal. Thus I recommend this paper for publication in EJMB/Fluids.

Reviewer #2: Compared to the original version, the paper has been improved in several respects and useful additional information has been provided (the number of figures presenting quantitative results has, for instance, been increased very significantly).

We believe that these significant improvements make the paper suitable for publication in the European Journal of Mechanics .

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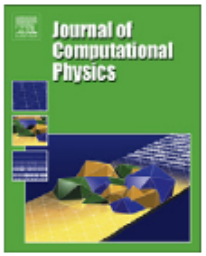

A conservative numerical method for the Cahn–Hilliard equation in complex domains

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ABSTRACT

We propose an efficient finite difference scheme for solving the Cahn–Hilliard equation with a variable mobility in complex domains. Our method employs a type of unconditionally gradient stable splitting discretization. We also extend the scheme to compute the Cahn–Hilliard equation in arbitrarily shaped domains. We prove the mass conservation property of the proposed discrete scheme for complex domains. The resulting discretized equations are solved using a multigrid method. Numerical simulations are presented to demonstrate that the proposed scheme can deal with complex geometries robustly. Furthermore, the multigrid efficiency is retained even if the embedded domain is present.

Journal: CAF

Article Number: 1501

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Acknowledgements를 수정할수있다.

In line 98	the CH Eq. (2) and (3).	the CH Eqs. (2) and (3).
In lines 218-220	$$0=\sum_{i=1}^{N_x}\sum_{j=1}^{N_y}\frac{c_{ij}^{n+1}-c_{ij}^{n}}{\Delta t}=\sum_{i=1}^{N_x}\sum_{j=1}^{N_y}\Delta_d(\nu_{ij}^{n+1}-c_{ij}^{n})$$ $$=-\sum_{j=1}^{N_y}\frac{(\nu_{1,j}^{n+1}-\nu_{0,j}^{n+1})-(c_{1,j}^{n}-c_{0,j}^{n})}{h^2}$$ $$+\sum_{j=1}^{N_y}\frac{(\nu_{N_x+1,j}^{n+1}-\nu_{N_x,j}^{n+1})-(c_{N_x+1,j}^{n}-c_{N_x,j}^{n})}{h^2}$$ $$-\sum_{i=1}^{N_x}\frac{(\nu_{i,1}^{n+1}-\nu_{i,0}^{n+1})-(c_{i,1}^{n}-c_{i,0}^{n})}{h^2}$$ $$+\sum_{i=1}^{N_x}\frac{(\nu_{i,N_y+1}^{n+1}-\nu_{i,N_y}^{n+1})-(c_{i,N_y+1}^{n}-c_{i,N_y}^{n})}{h^2}.$$	Each summation and fraction should be placed on the same line.
In lines 223-225	We need some space around "for".	
In lines 278-279	As we can see in Fig. 8, the interface length is the shortest when the wall energy equals zero.	This sentence should be removed because it's redundant.
In line 406	= 0.014, Re = 20, We = 0.6, (We need some space before "Re".)	

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Automatic Algorithm for Image Segmentation

Department of Mathematics, Korea University

Junseok Kim

Collaborators : HyunGeun Lee, Darae Jeong, and Dongsun Lee

slide 1

I’m a graduate student at Korea University majoring in mathematics.

My name is Junseok Kim.

Today, I’d like to talk about “automatic algorithm for image segmentation”.

This work was done in collaboration with HyunGeun Lee, Darae Jung, and Dongsun Lee.

If you have any questions, please feel free to interrupt.

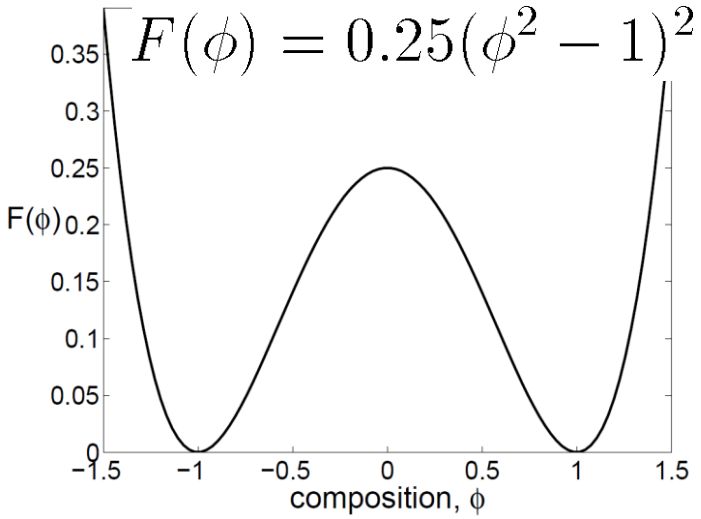
The objective of my research is to remove noise in images by using a mathematical model.

Left figure is a fingerprint with noise and the right figure is the fingerprint after removing the noise.

Governing equation for image segmentation

- **Mumford-Shah energy functional :**

$$\mathcal{E}(\phi) = \int_{\Omega} \left(\frac{F(\phi)}{\epsilon^2} + \frac{|\nabla \phi|^2}{2} + G(\phi, f_0) \right) d\mathbf{x},$$



- **Governing equation :**

$$\phi_t = -\frac{F'(\phi)}{\epsilon^2} + \Delta\phi$$
$$+\lambda[(1-\phi)(f_0 - c_2)^2 - (1+\phi)(f_0 - c_1)^2].$$

slide 2

The governing equation for image segmentation can be derived from Mumford-Shah energy functional.
In this functional, F of phi is a fourth-order polynomial as shown in this graph.

By applying the gradient descent method, we have the governing equation for image segmentation.

Proposed numerical method

- **Operator splitting technique**

Step 1) $$\phi_{ij}^{n+1,1} = e^{-\lambda[(f_0-c_1^n)^2+(f_0-c_2^n)^2]\Delta t}\phi_{ij}^n + (e^{-\lambda[(f_0-c_1^n)^2+(f_0-c_2^n)^2]\Delta t}-1)\frac{(f_0-c_1^n)^2-(f_0-c_2^n)^2}{(f_0-c_1^n)^2+(f_0-c_2^n)^2}.$$

Step 2) $$\frac{\phi^{n+1,2}-\phi^{n+1,1}}{\Delta t} = \Delta_d \phi^{n+1,2},$$

Step 3) $$\phi^{n+1} = \frac{\phi^{n+1,2}}{\sqrt{e^{\frac{-2\Delta t}{\epsilon^2}} + (\phi^{n+1,2})^2(1-e^{\frac{-2\Delta t}{\epsilon^2}})}}.$$

if $|\phi^n| \le 1$, then we get $|\phi^{n+1}| \le 1$.

Unconditionally stable scheme !!

slide 3

The proposed numerical method is based on operator splitting technique.

Here, we take three steps to advance the numerical solution from time n to time n+1.

And this method is an unconditionally stable scheme.

-Question (raise your hand)

What does it mean by “unconditionally stable scheme”?

Okay, that is a good question. She asked “what does it mean by unconditionally stable scheme?

The unconditionally stable scheme means the existence of the numerical solution does not depend on the time step size.

Does that answer your question?

Convergence test

Initial profile : $c(x,0) = \frac{1}{2}\left(1 - \tanh\frac{x}{2\sqrt{2}\epsilon}\right)$

Analytic final profile : $c(x,T) = \frac{1}{2}\left(1 - \tanh\frac{x-0.5}{2\sqrt{2}\epsilon}\right)$

Parameters are used as : $h = 2^{1-n}, \epsilon = 0.015, s = 3/(\sqrt{(2)}\epsilon),$

$$\Delta t = h/(40s), T = 1/(2s).$$

Case	128	rate	256	rate	512	rate	1024
$\| \mathbf{e}^{N_t} \|_2$	1.320E-2	1.972	3.363E-3	1.977	8.544E-4	1.962	2.193E-4
$\| \mathbf{e}^{N_t} \|_\infty$	5.334E-2	1.962	1.370E-2	1.975	3.486E-3	1.961	8.953E-4

☞ **second order accurate in space and time**

slide 4

Now, in order to validate the proposed numerical method, we performed the convergence test.

From the table, we can observe that this method is second order accurate in space and time.

Image segmentation for a fingerprint

Parameters are used as : $\epsilon_3, \Delta t = 5E\text{-}6, tol = 0.25, \lambda = 1.5E5$
on $\Omega = (0,1) \times (0,1)$ with a 256×256 mesh.

(a) (b) (c) (d) (e)

Figure 1. Temporal evolutions of a fingerprint : (a) initial image, (b) image with noise, numerical results after (c) 2 iterations, (d) 4 iterations, and (e) 10 iterations.

slide 5

To test our proposed algorithm, we took a clean image of a fingerprint (indicate image (a) with a laser point).

Then, we artificially added some noise in the image (indicate image (b) with a laser point). (b) is the initial condition in our algorithm. (c), (d), and (e) are the results after 2, 4, and 10 iterations.

From figure (e), we removed most of the noise after 10 iterations.

Summary

- We proposed an unconditionally stable hybrid numerical scheme for image segmentation.
- We performed the numerical test with noisy fingerprint image.
- In our future work, we will study an automatic decision of the range of λ.

$$\phi_t = -\frac{F'(\phi)}{\epsilon^2} + \Delta\phi$$
$$+\lambda[(1-\phi)(f_0-c_2)^2 - (1+\phi)(f_0-c_1)^2].$$

slide 6

Let me summarize my talk.

In this study, we proposed an unconditionally stable hybrid scheme for image segmentation.

And we performed the numerical test with noisy fingerprint images.

In our future work, we will study an automatic decision of the range of lambda.

$$\phi_t = -\frac{F'(\phi)}{\epsilon^2} + \Delta\phi$$
$$+\lambda[(1-\phi)(f_0-c_2)^2 - (1+\phi)(f_0-c_1)^2].$$

Thank you !

slide 7

Thank you for your attention.

감사합니다.