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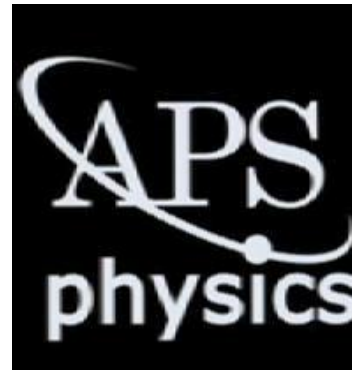
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## Physical Review B

condensed matter and materials physics

American Physical Society



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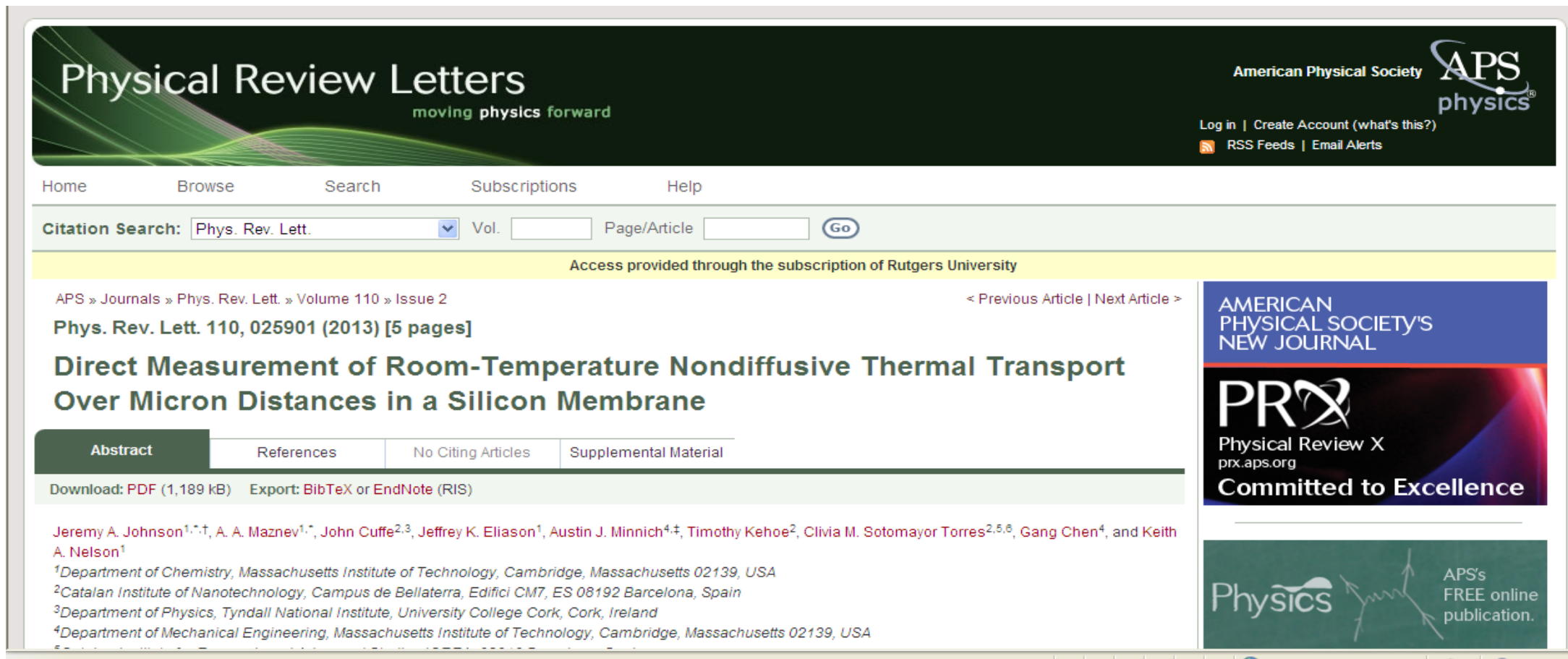
APS » Journals » Phys. Rev. B » Accepted Papers » Derivation of the Johnson-Samwer  $T^{2/3}$  temperature dependence of the yield strain in metallic glasses

## Derivation of the Johnson-Samwer $T^{2/3}$ temperature dependence of the yield strain in metallic glasses


Ratul Dasgupta, Ashwin Joy, H. G. E. Hentschel, and Itamar Procaccia

Accepted Thursday Dec 13, 2012

Metallic Glasses are prone to fail mechanically via a shear-banding instability. In a remarkable paper Johnson and Samwer demonstrated that this failure enjoys a high degree of universality in the sense that a large group of metallic glasses appears to possess a yield-strain that decreases with temperature following a  $-T^{2/3}$  law up to logarithmic corrections. In this Letter we offer a theoretical derivation of this law. We show that our formula fits very well simulational data on typical amorphous solids.



The screenshot shows the Physical Review Letters website interface. At the top, the journal title "Physical Review Letters" is displayed with the tagline "moving physics forward". The American Physical Society (APS) logo is visible in the top right corner. Below the header, there are navigation links for Home, Browse, Search, Subscriptions, and Help. A search bar is present with the text "Citation Search: Phys. Rev. Lett." and a "Go" button. A yellow banner indicates "Access provided through the subscription of Rutgers University". The main content area features the article title "Direct Measurement of Room-Temperature Nondiffusive Thermal Transport Over Micron Distances in a Silicon Membrane" from "Phys. Rev. Lett. 110, 025901 (2013) [5 pages]". Below the title are tabs for "Abstract", "References", "No Citing Articles", and "Supplemental Material". A download link for the PDF (1,189 kB) and export options for BibTeX or EndNote (RIS) are provided. The authors listed are Jeremy A. Johnson, A. A. Maznev, John Cuffe, Jeffrey K. Eliason, Austin J. Minnich, Timothy Kehoe, Clivia M. Sotomayor Torres, Gang Chen, and Keith A. Nelson. Their affiliations are listed below the author names. On the right side of the page, there are promotional banners for the American Physical Society's new journal and Physical Review X, along with a Physics logo and text about APS's free online publication.



The screenshot shows the Physical Review Letters website interface. At the top, the journal title "Physical Review Letters" is displayed with the tagline "moving physics forward". The American Physical Society (APS) logo is visible in the top right corner, along with navigation links for "Log in", "Create Account", "RSS Feeds", and "Email Alerts".

The main content area features a search bar with the text "Phys. Rev. Lett." and a "Go" button. Below the search bar, a yellow banner indicates "Access provided through the subscription of Rutgers University". The article title is "Experimental Investigation of Size Effects on the Thermal Conductivity of Silicon-Germanium Alloy Thin Films", published in "Phys. Rev. Lett. 109, 195901 (2012) [5 pages]".

The article is categorized under "Abstract", "References", and "No Citing Articles". A download link for the PDF (441 kB) is provided, along with options to export the citation in BibTeX or EndNote (RIS) format. The authors listed are Ramez Cheaito<sup>1</sup>, John C. Duda<sup>1,2</sup>, Thomas E. Beechem<sup>2</sup>, Khalid Hattar<sup>2</sup>, Jon F. Ihlefeld<sup>2</sup>, Douglas L. Medlin<sup>3</sup>, Mark A. Rodriguez<sup>2</sup>, Michael J. Campion<sup>2,4</sup>, Edward S. Piekos<sup>2</sup>, and Patrick E. Hopkins<sup>1,\*</sup>.

Footnotes provide affiliations: <sup>1</sup>Department of Mechanical and Aerospace Engineering, University of Virginia, Charlottesville, Virginia 22904, USA; <sup>2</sup>Sandia National Laboratories, Albuquerque, New Mexico 87123, USA; <sup>3</sup>Sandia National Laboratories, Livermore, California 94550, USA; <sup>4</sup>Massachusetts Institute of Technology, Department of Material Science and Engineering, Cambridge, Massachusetts 02139, USA.

On the right side of the page, there is a promotional banner for the American Physical Society's new journal, Physical Review X (prx.aps.org), with the slogan "Committed to Excellence". Below this, another banner promotes APS's free online publication service.





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Physical Review Letters, Physical Review, and Reviews of Modern Physics

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- Physical Review C
- Physical Review D
- Physical Review E
- Physical Review X
- Physical Review ST: Accelerators and Beams
- Physical Review ST: Physics Education Research
- Physical Review Online Archive (PROLA)
- Physics - Spotlighting Exceptional Research
- Virtual Journals in Science and Technology
- Annual Index

of a 3D compressed soft solid layer with perfectly ordered I-shape (left) deformation patterns with alternating orientation. Bottom: Depth-averaged and Y patterns. [T. Tallinen, J. S. Biggins, and L. Mahadevan, Phys. Rev. Lett.

**Announcements**

As a service to our readers, starting January we will formally mark a small number of papers published in *Physical Review Special Topics - Accelerators and Beams* that the editors and referees find of particular interest, importance, or clarity.

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**Announcement: Changes to the Table of Contents of *Physical Review E***

**January 2, 2013**

We are pleased to announce several changes to the table of contents of *Physical Review E*.

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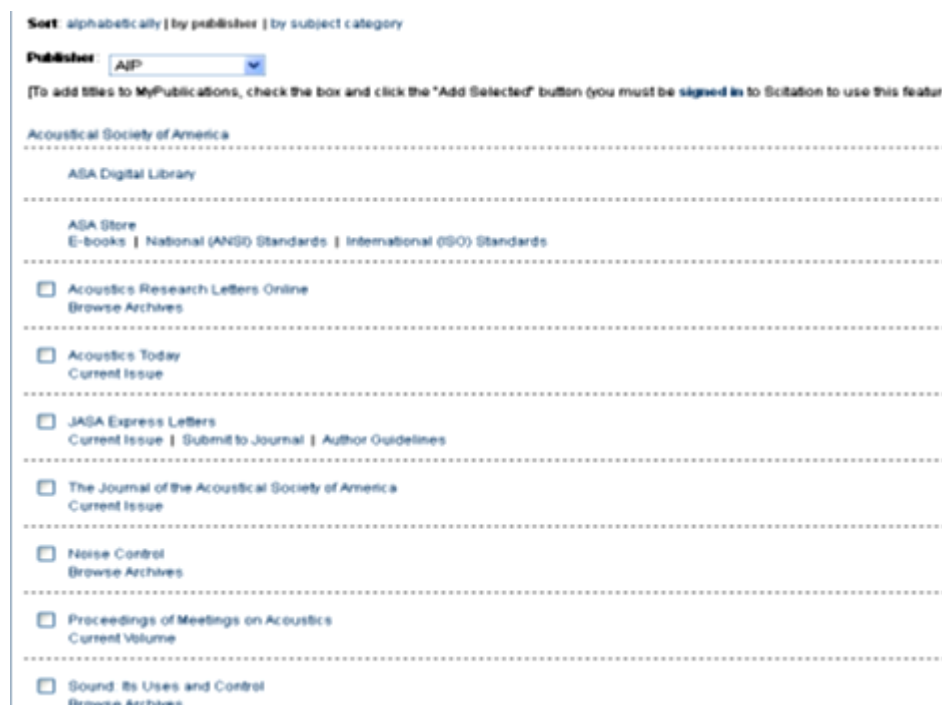
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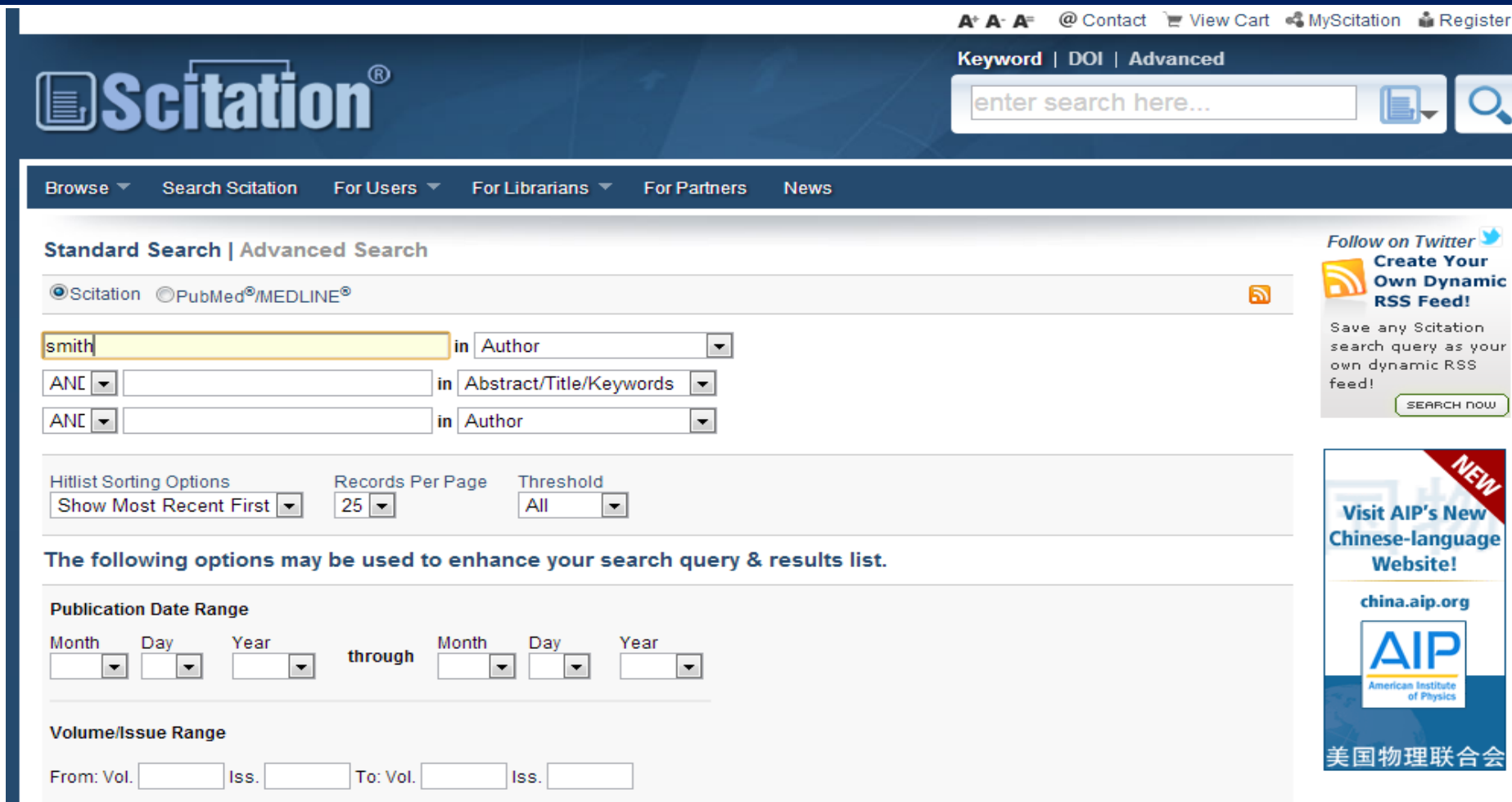
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La propiedad y funcionamiento de Scitation está a cargo de AIP para el beneficio de la comunidad de la ciencia y la ingeniería.

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The screenshot shows the Scitation website search interface. At the top right, there are navigation links: "A+ A- A" (font size), "@ Contact", "View Cart", "MyScitation", and "Register". Below these are search filters: "Keyword | DOI | Advanced". A search bar contains the text "enter search here...".

The main navigation bar includes: "Browse", "Search Scitation", "For Users", "For Librarians", "For Partners", and "News".

The search section is titled "Standard Search | Advanced Search". It features radio buttons for "Scitation" (selected) and "PubMed®/MEDLINE®".

The search criteria are:
 

- Search term: "smith" in "Author"
- Filter: "ANC" in "Abstract/Title/Keywords"
- Filter: "ANC" in "Author"

Hitlist Sorting Options: "Show Most Recent First", "Records Per Page: 25", "Threshold: All".

A note states: "The following options may be used to enhance your search query & results list." Below this are:
 

- Publication Date Range:** Month, Day, Year through Month, Day, Year.
- Volume/Issue Range:** From: Vol. [ ] Iss. [ ] To: Vol. [ ] Iss. [ ]

On the right side, there is a "Follow on Twitter" section with a "Create Your Own Dynamic RSS Feed!" button and a "SEARCH NOW" button. Below that is a promotional banner for "Visit AIP's New Chinese-language Website!" with the URL "china.aip.org" and the AIP logo (American Institute of Physics) and Chinese text "美国物理联合会".



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[\[ 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Next 25 | More Results \]](#)


**You were searching for : (smith <IN> author) [RSS](#)**  
 You found 15163 out of 1688000 (500 returned) Documents 1 - 25 listed on this page  
*Refine your query if desired:*

in

*Results Sorting Options*

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- HP Vane Aerodynamics and Heat Transfer in the Presence of Aggressive Inlet Swirl**  
 Imran Qureshi, Andy D. Smith, and Thomas Povey  
 J. Turbomach. **135**, 021040 (2013) Full Text: [ [Read Online \(HTML\)](#) ]
- Validation of Numerical Simulation for Rotating Stall in a Transonic Fan**  
 Minsuk Choi, Nigel H. S. Smith, and Mehdi Vahdati  
 J. Turbomach. **135**, 021004 (2013) Full Text: [ [Read Online \(HTML\)](#) ]
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- Structural study of Al<sub>2</sub>O<sub>3</sub>-Na<sub>2</sub>O-CaO-P<sub>2</sub>O<sub>5</sub> bioactive glasses as a function of aluminium content**  
 J. M. Smith, S. P. King, E. R. Barney, J. V. Hanna, R. J. Newport, and D. M. Pickup  
 J. Chem. Phys. **138**, 034501 (2013) Full Text: [ [Read Online \(HTML\)](#) ]
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Month  Day  Year  through Month  Day  Year


**Volume/Issue Range**

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Searching for . . . Returns records containing:

TiO[sub 2] or TiO      TiO<sub>2</sub>  
[sub2]

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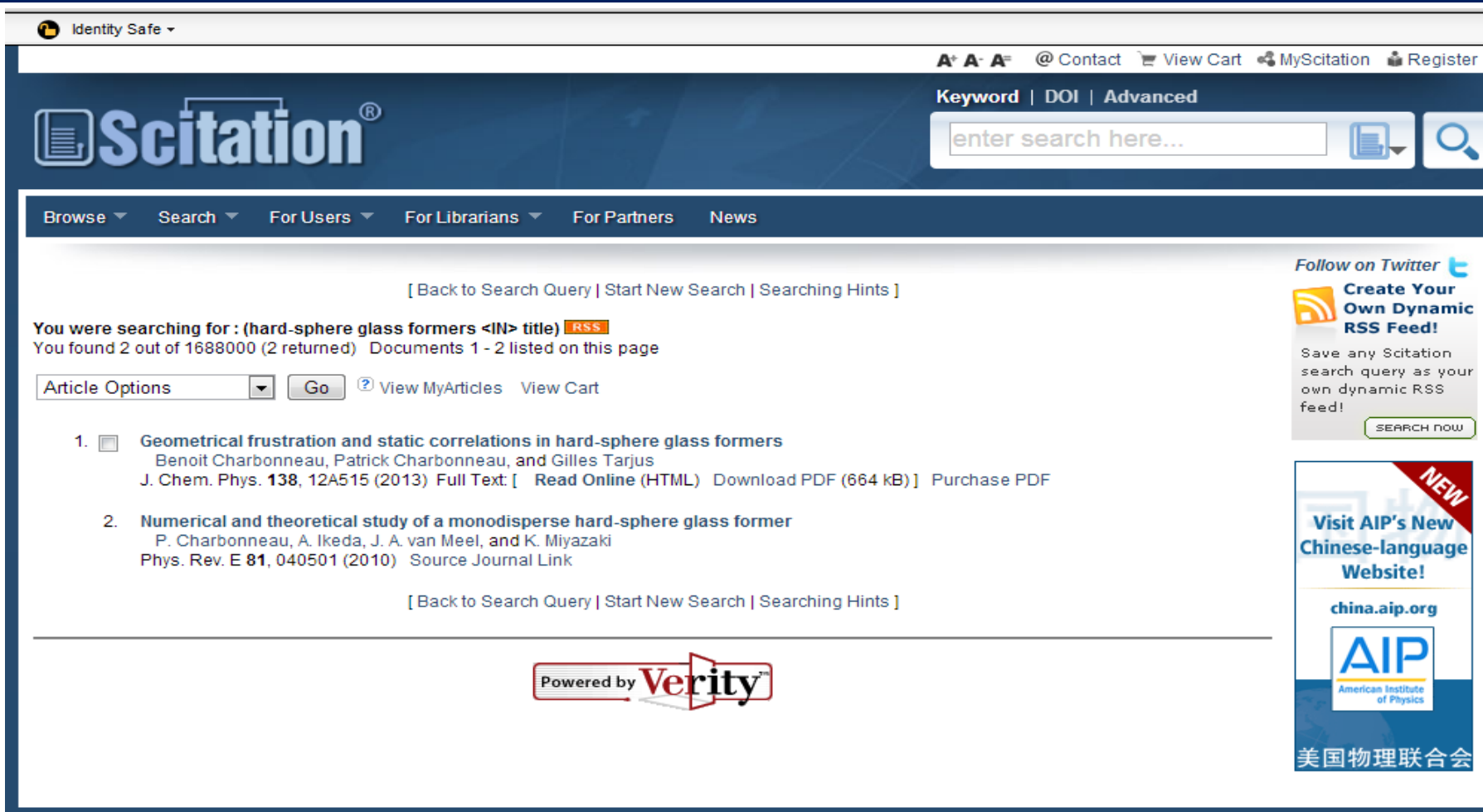
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Keyword | DOI | Advanced

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You were searching for : (hard-sphere glass formers <IN> title) **RSS**


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- Geometrical frustration and static correlations in hard-sphere glass formers**  
Benoit Charbonneau, Patrick Charbonneau, and Gilles Tarjus  
J. Chem. Phys. **138**, 12A515 (2013) Full Text: [ [Read Online \(HTML\)](#) [Download PDF \(664 kB\)](#) ] [Purchase PDF](#)
- Numerical and theoretical study of a monodisperse hard-sphere glass former**  
P. Charbonneau, A. Ikeda, J. A. van Meel, and K. Miyazaki  
Phys. Rev. E **81**, 040501 (2010) [Source Journal Link](#)

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Searching for . . . Returns records containing:

TiO[sub 2] or TiO [sub2]      TiO<sub>2</sub>



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- Geometrical frustration and static correlations in hard-sphere glass formers**  
Benoit Charbonneau, Patrick Charbonneau, and Gilles Tarjus  
J. Chem. Phys. **138**, 12A515 (2013) Full Text: [ [Read Online \(HTML\)](#) [Download PDF \(664 kB\)](#) ] [Purchase PDF](#)

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ANC geometric in Abstract/Title/Keywords

ANC in Author

Hitlist Sorting Options

Show Most Recent First

Records Per Page

25

Threshold

All

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You were searching for : ((mexico <and>(geometric <IN> (abstract,title,keywords))) **RSS**

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Refine your query if desired:

AND ▾  in Abstract/Title/Keywords ▾

Results Sorting Options

Show Most Recent First ▾

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[ Dipole-magnet field models based on a conformal map  
P. L. Walstrom  
Phys. Rev. ST Accel. Beams **15**, 102401 (2012) [ Source Journal Link ]

- Diffusion in two-dimensional conical varying width channels: Comparison of analytical and numerical results  
Inti Pineda, José Alvarez-Ramirez, and Leonardo Dagdug  
J. Chem. Phys. **137**, 174103 (2012) Full Text: [ [Read Online \(HTML\)](#) [Download PDF \(767 kB\)](#) ] [Purchase PDF](#)
- Determining the scale factor of a video-reflectometry set-up  
M. Cunill-Rodríguez, J. A. Delgado-Atencio, S. Vázquez-Montiel, and B. Morales-Cruzado  
AIP Conf. Proc. **1494**, 167 (2012) Full Text: [ [Read Online \(HTML\)](#) [Download PDF \(188 kB\)](#) ] [Purchase PDF](#)
- The geometric interpretation of the semimicroscopic algebraic cluster model and the role of the Pauli principle  
H. Yépez-Martínez, P. O. Hess, P. R. Fraser, and G. Léval  
AIP Conf. Proc. **1488**, 374 (2012) [Read Online \(HTML\)](#)

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mexico in Title ▾

ANC ▾ geometric in Abstract/Title/Keywords ▾

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Hitlist Sorting Options  Records Per Page  Threshold

The following options may be used to enhance your search query & results list.

Publication Date Range

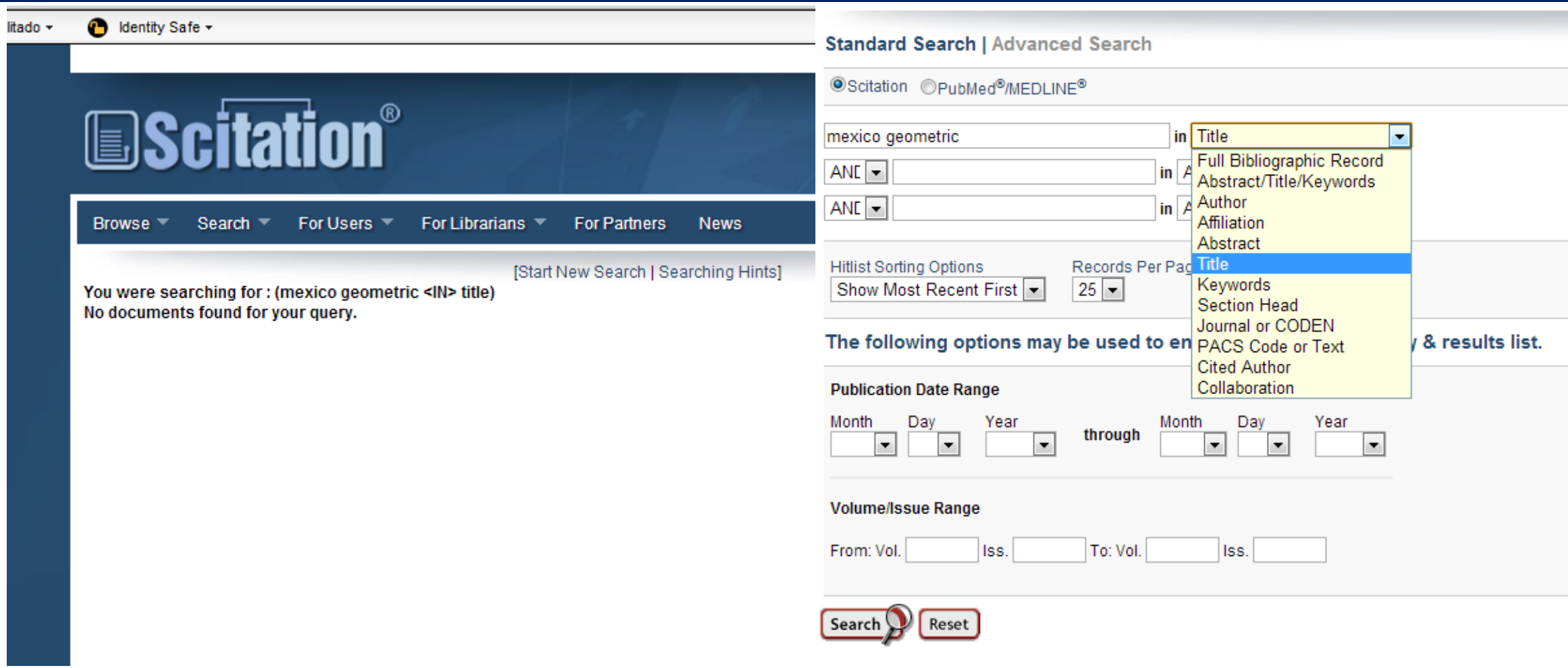
Month Day Year through Month Day Year

through

Volume/Issue Range

From: Vol.  Iss.  To: Vol.  Iss.





The screenshot shows the Scitation search interface. At the top, there are navigation links: [Browse](#), [Search](#), [For Users](#), [For Librarians](#), [For Partners](#), and [News](#). The search bar contains the query "mexico geometric" and is set to search in the "Title" field. A dropdown menu is open, showing the following options: Full Bibliographic Record, Abstract/Title/Keywords, Author, Affiliation, Abstract, Title (highlighted), Keywords, Section Head, Journal or CODEN, PACS Code or Text, Cited Author, and Collaboration. Below the search bar, there are options for "Hitlist Sorting Options" (Set to "Show Most Recent First") and "Records Per Page" (Set to "25"). The search results section shows "You were searching for : (mexico geometric <IN> title) No documents found for your query." At the bottom, there are "Search" and "Reset" buttons.

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Search [ ] Reset [ ]

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ANC in Author

Hitlist Sorting Options: Show Most Recent First

The following options

Publication Date Range: Month, Day, Year

Volume/Issue Range: From: Vol. [ ] Iss. [ ]

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- Dark-current-free laser-plasma acceleration in blowout regime using nonlinear plasma lens**  
 S. Y. Kalmykov  
 AIP Conf. Proc. 1507, 921 (2013) Full Text: [ [Read Online \(HTML\)](#) [Download PDF \(408 kB\)](#) ] [Purchase PDF](#)

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# SIAM Journals Online

1. Multiscale Modeling and Simulation (MMS) – 2003 (**2003-2014**)
2. Journal on Applied Dynamical Systems (SIADS) – 2002 (**2002-2014**)
3. Journal on Applied Mathematics (SIAP) – 1953 (**1997-2014**)
4. Journal on Computing (SICOMP) - 1972 (**1997-2014**)
5. Journal on Control and Optimization (SICON) - 1962 (**1997-2014**)
6. Journal on Discrete Mathematics (SIDMA) - 1988 (**1997-2014**)
7. Journal on Financial Mathematics (SIFIN) - 2010 (**2010-2014**)
8. Journal on Imaging Sciences (SIIMS) - 2008 (**2008-2014**)



# SIAM Journals Online

9. Journal on Mathematical Analysis (SIMA) – 1970 (**1997-2014**)
10. Journal on Matrix Analysis and Applications (SIMAX) - 1980 (**1997-2014**)
11. Journal on Numerical Analysis (SINUM) - 1964 (**1997-2014**)
12. Journal on Optimization (SIOPT) - 1991 (**1997-2014**)
13. Journal on Scientific Computing (SISC) - 1980 (**1997-2014**)
14. Review (SIREV) - 1959 (**1997-2014**)
15. Theory of Probability and Its Applications (TVP) – 1956 (**1997-2014**)
16. Journal on Uncertainty Quantification (JUQ) - 2013 (**2013-2014**)



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## Búsqueda Simple

The screenshot shows the SIAM website homepage. A search bar at the top contains the text "genetic algorithm". To the right of the search bar is a dropdown menu with "All Content" selected. Below the search bar, there are navigation links for "Home", "Journals", "E-books", "Proceedings", and "For Authors". A blue callout box with a white border points to the search bar and the dropdown menu, containing the text: "Buscar en todo el contenido, sólo journals ó sólo eBooks".

### Holdings

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The screenshot shows the SIAM search interface. A blue callout box on the left points to the 'Search Criteria' section, containing the text 'Restringir por título de la publicación'. A blue callout box on the right points to the 'Publication Date' section, containing the text 'Restringir por fecha'. A blue arrow on the far left points towards the search interface.

**Search Criteria**

Search Terms:

Add another search term

Publication Title(s):

Publication Date

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To: Month  Year

**Session History**

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- Modeling the Genetic Algorithm by a Nonhomogeneous Markov Chain: Weak and Strong Ergodicity

**Update**

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Crterios de  
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The screenshot shows the SIAM website search results for the query "genetic algorithm". The page includes a navigation menu, search filters, and a list of search results. Annotations highlight the following features:

- Search Criteria:** A box highlights the search criteria section, including the search filter and the search results list.
- Sorting:** A box highlights the "Sort by" dropdown menu, which is set to "Relevancy".
- Search Results:** A box highlights the search results list, including the title "Modeling the Genetic Algorithm by a Nonhomogeneous Markov Chain: Weak and Strong Ergodicity" and the authors "V. S. M. Campos, A. G. C. Pereira, and J. A. Rojas Cruz".
- Links:** A box highlights the links "Abstract | References | PDF (155 KB)" for the selected result.
- Text Availability:** A box highlights the text "Texto completo disponible para su institución" (Full text available for your institution).

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Ma, Chaoqun (26)  
Wu, Jianhong (26)  
O'Malley, Bob (23)

## Keyword

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clustering (13)  
92b05 (18)  
90c30 (14)  
90c25 (13)

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## Publication Year

2007 (88)  
2009 (81)  
2012 (74)  
2010 (72)  
2005 (67)

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The screenshot shows a journal article page from SIAM Journal on Computing. The article title is "Fast Side-Effects" by Meng Wang. The page includes navigation links for "Previous Article" and "Next Article", and tabs for "Abstract", "References", "PDF", and "Cited By". The article abstract discusses distinguishing substrings of length L from bad and good strings. The page also features a sidebar with social media links, a "Notify Me!" section, and a "Session History" section. The "Cited by" section lists two references. The "Data del artículo" section includes keywords, AMS Subject Headings, Digital Object Identifier, and Publication Data.



## SIAM Journal on Computing

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Abstract **References** PDF Cited By

SIAM J. Comput., 32(4), 1073–1090. (18 pages)

## Genetic Design of Drugs Without Side-Effects

Xiaotie Deng, Guojun Li, Zimao Li, Bin Ma, and Lushen Wang

Consider two sets of strings,  $\{\mathcal{B}\}$  (bad genes) and  $\{\mathcal{G}\}$  (good genes), as well as two integers  $d_b$  and  $d_g$  ( $d_b \leq d_g$ ). A frequently occurring problem in computational biology (and other fields) is to find a (distinguishing) substring  $s$  of length  $L$  that distinguishes the bad strings from good strings, i.e., such that for each string  $s_i \in \{\mathcal{B}\}$  there exists a length- $L$  substring  $t_i$  of  $s_i$  with  $d(s, t_i) \leq d_b$  (close to bad strings), and for every substring  $u_j$  of length  $L$  of every string  $s_j \in \{\mathcal{G}\}$ ,  $d(s, u_j) \geq d_g$  (far from good strings).

We present a polynomial time approximation scheme to settle the problem; i.e., for any constant  $\epsilon > 0$ , the algorithm finds a string  $s$  of length  $L$  such that for every  $s_i \in \{\mathcal{B}\}$  there is a length- $L$  substring  $t_i$  of  $s_i$  with  $d(t_i, s) \leq (1+\epsilon)d_b$ , and for every substring  $u_j$  of length  $L$  of every  $s_j \in \{\mathcal{G}\}$ ,  $d(u_j, s) \geq (1-\epsilon)d_g$  if a solution to the original pair  $(d_b \leq d_g)$  exists. Since there is a polynomial number of such pairs  $(d_b, d_g)$ , we can exhaust all the possibilities in polynomial time to find a good approximation required by the corresponding application problems.

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Permalink: <http://dx.doi.org/10.1137/S0097539701397825>

### Cited by

- (2013) On approximating string selection problems with outliers. *Theoretical Computer Science* **498**, 107-114  
CrossRef
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- 2012. Identification of Distinguishing Motifs. , 1-14.  
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approximation algorithms, computational molecular biology, distinguishing substring selection

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- Convergence Criteria for Genetic Algorithms
- 4. A Parallel Genetic Algorithm Applied to the Mapping Problem
- Modeling the Genetic Algorithm by a Nonhomogeneous Markov Chain: Weak

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Volume 32, Issue 4

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## Genetic Design of Drugs Without Side-Effects

Xiaotie Deng, Guojun Li, Zimao Li, Bin Ma, and Lusheng Wang

### Abstract

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Permalink: <http://dx.doi.org/10.1137/S0097539701397825>

[1] Amir Ben-Dor, Giuseppe Lancia, Jennifer Perone, R. Ravi, Banishing bias from consensus sequences, Lecture Notes in Comput. Sci., Vol. 1264, Springer, Berlin, 1997, 247–261

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[3] L. Gaśieniec, J. Jansson, and A. Lingas, Efficient approximation algorithms for the

## Related Databases

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## Article Data

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Published online: 17 February 2012

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approximation algorithms, computational molecular biology, distinguishing substring selection

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SIAM J. COMPUT.  
Vol. 32, No. 4, pp. 1073–1090

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## GENETIC DESIGN OF DRUGS WITHOUT SIDE-EFFECTS\*

XIAOTIE DENG<sup>†</sup>, GUOJUN LI<sup>‡</sup>, ZIMAO LI<sup>§</sup>, BIN MA<sup>¶</sup>, AND LUSHENG WANG<sup>†</sup>

**Abstract.** Consider two sets of strings,  $\mathcal{B}$  (bad genes) and  $\mathcal{G}$  (good genes), as well as two integers  $d_b$  and  $d_g$  ( $d_b \leq d_g$ ). A frequently occurring problem in computational biology (and other fields) is to find a (distinguishing) substring  $s$  of length  $L$  that distinguishes the bad strings from good strings, i.e., such that for each string  $s_i \in \mathcal{B}$  there exists a length- $L$  substring  $t_i$  of  $s_i$  with  $d(s, t_i) \leq d_b$  (close to bad strings), and for every substring  $u_i$  of length  $L$  of every string  $g_i \in \mathcal{G}$ ,  $d(s, u_i) \geq d_g$  (far from good strings).

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**Key words.** approximation algorithms, computational molecular biology, distinguishing substring selection

**AMS subject classifications.** 68W25, 90C27, 92D20

**DOI.** 10.1137/S0097539701397825

**1. Introduction.** Research effort in molecular biology, such as the human genome project, has been revealing the secret of our genetic composition, the long DNA sequences that can determine many aspects of life. Applications that use this information have posed new challenges to the design and analysis of efficient computational methods.

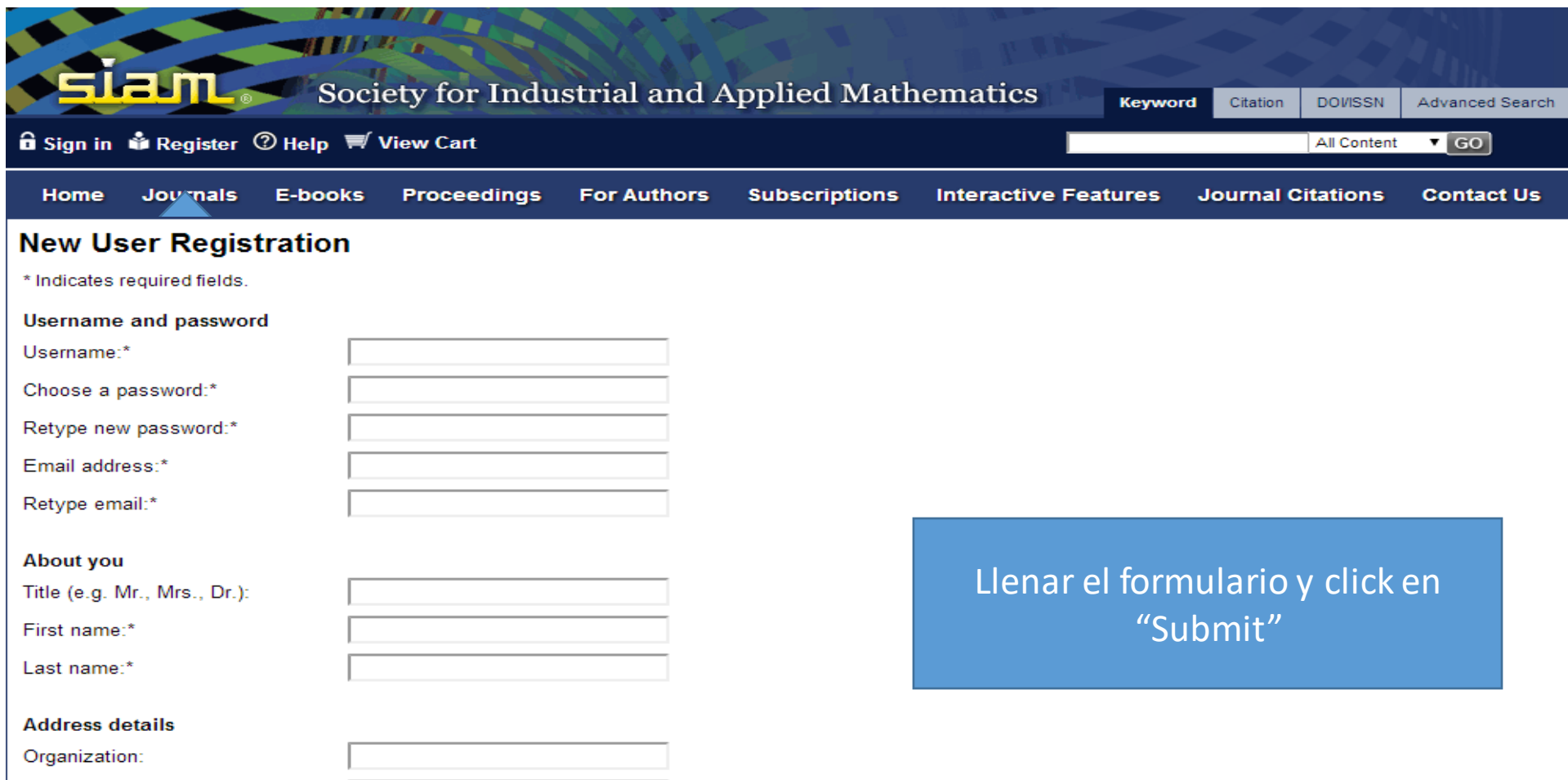
A frequently recurring problem in biological applications is to find one substring of length  $L$  that appears (with a few substitutions) at least once in each of a set of bad strings (such as bacterial sequences) and is not “close” to any substring of length

En ventana adicional





The screenshot shows the SIAM website homepage. The navigation menu includes: Home, Journals, E-books, Proceedings, For Authors, Subscriptions, Interactive Features, Journal Citations, and Contact Us. A dropdown menu for 'Journals' is open, listing various journals such as 'SIAM J. on Applied Dynamical Systems', 'SIAM J. on Applied Mathematics', 'SIAM J. on Computing', 'SIAM J. on Control and Optimization', 'SIAM J. on Discrete Mathematics', 'SIAM J. on Financial Mathematics', 'SIAM J. on Imaging Sciences', 'SIAM J. on Mathematical Analysis', 'SIAM J. on Matrix Analysis and Applications', 'SIAM J. on Numerical Analysis', 'SIAM J. on Optimization', and 'SIAM J. on Scientific Computing'. A callout bubble points to this list with the text 'Navegar en cada uno de los journals'. Another callout bubble points to the 'Interactive Features' section, which includes links for 'Facebook', 'Flickr', 'Twitter', and 'YouTube', with the text 'Ir a redes sociales en las que está SIAM, así como su canal en YouTube'. A blue arrow on the left side of the slide points towards the screenshot.



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The screenshot shows the SIAM user profile page. At the top, there is a navigation bar with the SIAM logo and the text "Society for Industrial and Applied Mathematics". Below this, there are search options: "Keyword", "Citation", "DOI/ISSN", and "Advanced Search". A welcome message for "Raquel Mendoza" is displayed, along with "Logout", "Help", and "View Cart" links. A search bar contains "All Content" and a "GO" button. A main navigation menu includes "Home", "Journals", "E-books", "Proceedings", "For Authors", "Subscriptions", "Interactive Features", "Journal Citations", and "Contact Us".

The "Profile" section is active, with tabs for "Publications", "Articles/Book Chapters", "Alerts", "Access", "Account info", and "Institutional administration". The "Publications" tab is selected, showing a dropdown menu with "Multiscale Modeling & Simulation" and buttons for "Browse This Title" and "Add Publication to Favorites". Below this, it states "You do not have any favorite titles." and "You do not have any favorite books."

The "Subscribed Journals" section is highlighted with a red box. It features the heading "Subscribed Journals" and an "Access Indicator" legend: a green circle with 'C' for Complimentary, a green circle with 'F' for Full, a green circle with 'P' for Partial, and a grey circle for No access. Below the legend, the start of a journal entry "SIAM Journal on Discrete Mathematics" is visible.

# Muchas Gracias

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