

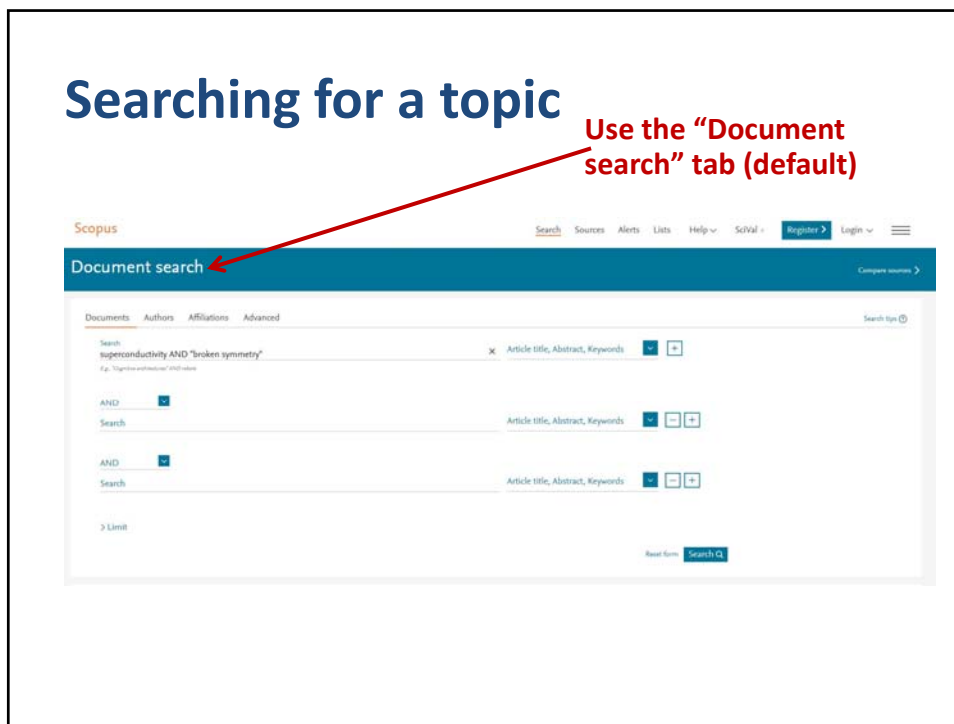
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- 350 million scientific web pages indexed by Scirus
- 25.2 million patent records
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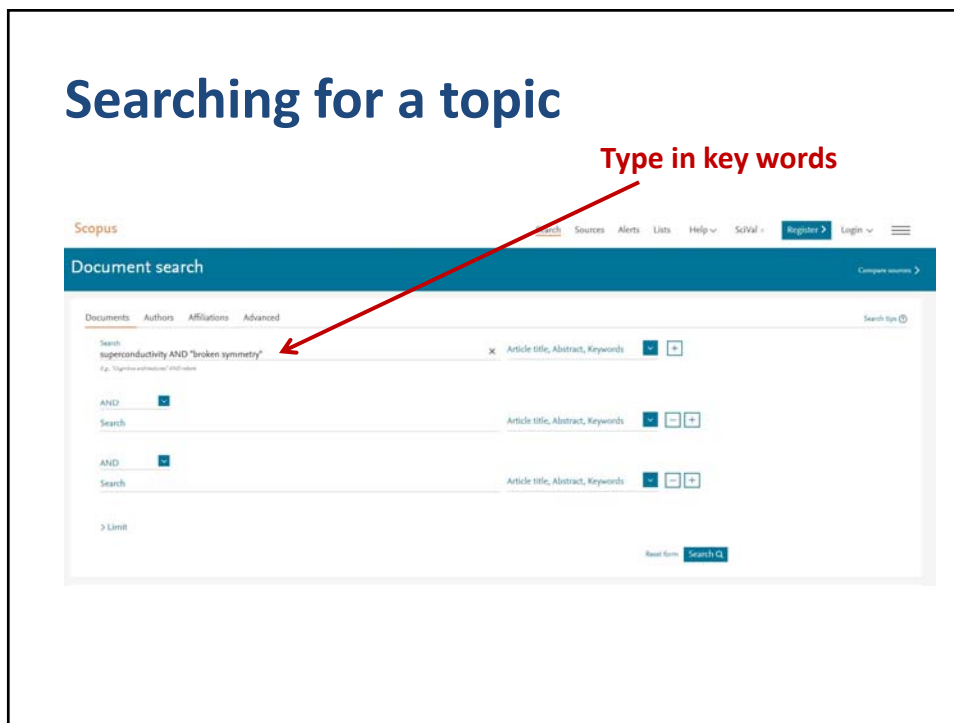
Searching for a topic

Use the "Document search" tab (default)



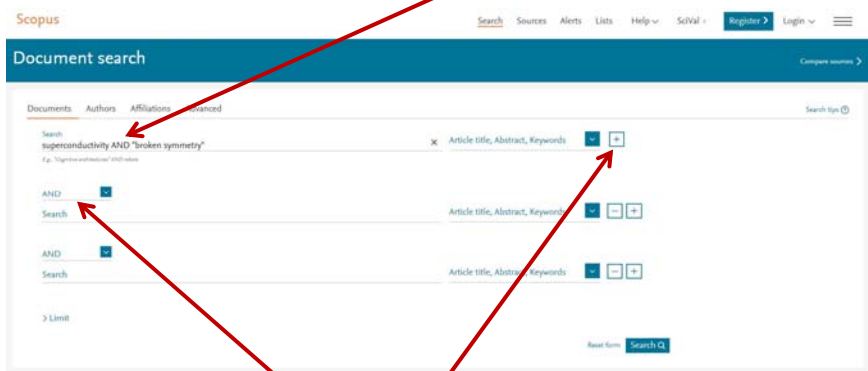
Searching for a topic

Type in key words



Searching for a topic

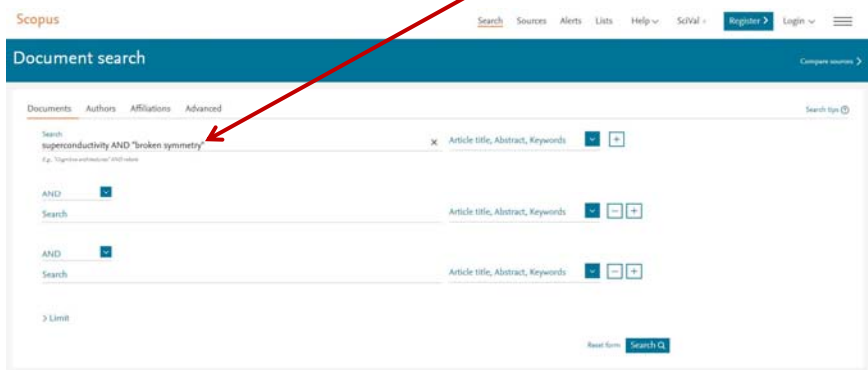
Use Boolean operators to add or narrow terms, or add more search fields



Or use the "add field" button

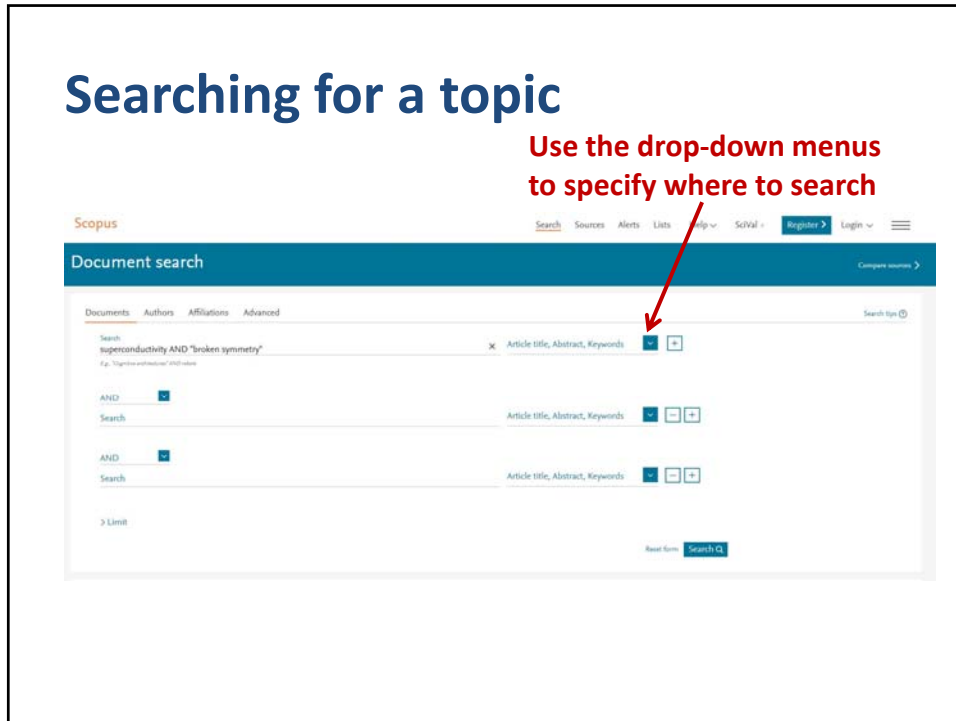
Searching for a topic

Use quotation marks to search for exact phrases

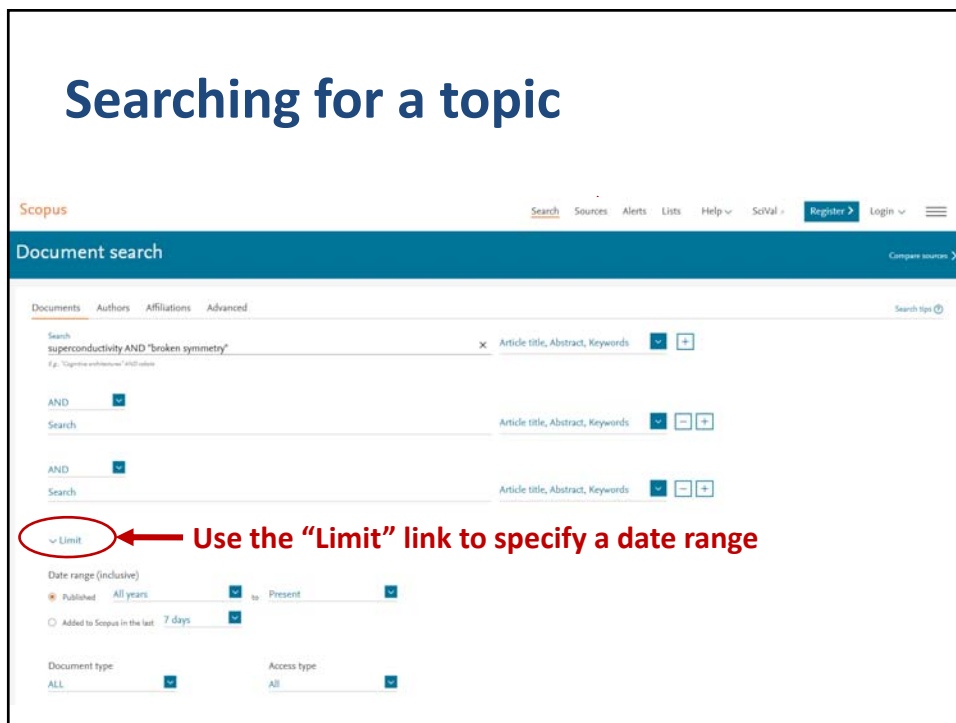


Searching for a topic

Use the drop-down menus
to specify where to search



Searching for a topic



Searching for a topic

The screenshot shows the Scopus search interface with the search query "superconductivity AND 'broken symmetry'". The search results are currently empty. The interface includes a search bar, a search type dropdown set to "Article title, Abstract, Keywords", and several filter options. A red circle highlights the "Limit" link, with an arrow pointing to it and the text "Use the 'Limit' link to specify a date range". Below this, there are filter options for "Date range (inclusive)", "Document type", and "Access type". Red arrows point to the "Date range" and "Access type" options with the text "or document or access type (open access)".

Results can be refined by many search parameters

The screenshot shows the Scopus search results page for the query "superconductivity AND 'broken symmetry'". The page displays 164 document results. The interface includes a search bar, a search type dropdown set to "Article title, Abstract, Keywords", and several filter options. A red arrow points to the "Limit or Exclude" link in the "Refine results" section, with the text "Limit or Exclude". Another red arrow points to the "Access type" filter, with the text "by access type". A third red arrow points to the "Year" filter, with the text "by year". A fourth red arrow points to the "Author name" filter, with the text "by author(s)".

Document title	Authors	Year	Source	Cited by
1 Evidence of cosmic strings by the observation of the alignment of quasar polarization axes on Mpc scale	Slagter, R.J.	2018	International Journal of Modern Physics D 27(9),1850094	0
2 Quantum Multicriticality near the Dirac-Semimetal to Band-Insulator Critical Point in Two Dimensions: A Controlled Ascent from One Dimension	Roy, B., Foster, M.S.	2018	Physical Review X 8(3),031049	2
3 Two-stage multipolar ordering in PV2A2O9 Kondo materials	Freyer, F., Abig, J., Lee, S., Li, S., Tolst, S., Kim, Y.B.	2018	Physical Review B 97(11),115111	0
4 Magnetic and Nematic Orders of the Two-Dimensional Electron Gas at Oxide (111)	Boudjele, H., Wachter, G., Paramakanti, A.	2018	Physical Review Letters 120(5),056402	2

Results can be automatically analyzed by clicking the link

The screenshot shows the Scopus search results page for the query "TITLE-ABS-KEY | superconductivity AND broken symmetry". The page displays 164 document results. A red arrow points to the "Analyze search results" button, which is circled in red. The results are listed in a table with columns for Document title, Authors, Year, Source, and Cited by. The first three results are:

Document title	Authors	Year	Source	Cited by
1 Evidence of cosmic strings by the observation of the alignment of quasar polarization axes on Mpc scale	Singar, R.J.	2018	International Journal of Modern Physics D 27(9),1850094	0
2 Quantum Multicriticality near the Dirac-Semimetal to Band-Insulator Critical Point in Two Dimensions: A Controlled Ascent from One Dimension	Roy, S., Foster, M.S.	2018	Physical Review X 8(3),031049	2
3 Two-stage multipolar ordering in PV2O5 Kondo materials	Frey, F., Atig, J., Lee, S., ..., Trötschel, S., Kim, Y.B.	2018	Physical Review B 97(11),115111	0

And Scopus will analyze the results in many different ways

The screenshot shows the Scopus search results page for the query "TITLE-ABS-KEY | superconductivity AND broken symmetry". The page displays 164 document results. The "by affiliation" section is highlighted, showing a horizontal bar chart of documents by affiliation. The top affiliations are:

Affiliation	Documents
Brazilian National Laboratory	10
University of Oslo	8
Los Alamos National Laboratory	7
Stanford University	7
National Institute of Advanced Industrial Science and Technology	6
University of Alberta (Edmonton & St. John's)	6
University of Toronto	6
Osaka Institute of Science and Technology	5
Central University	5

Below the affiliation chart, there are seven analysis options, each with a small chart and a red label:

- Documents by year (line chart) **by year**
- Documents per year by source (line chart) **by source**
- Documents by author (horizontal bar chart) **by author**
- Documents by country/territory (horizontal bar chart) **by country**
- Documents by type (donut chart) **by doc type**
- Documents by subject area (pie chart) **by subject**

Click on the title in the "results" list

The screenshot shows the Scopus search results page for the query "TITLE-ABS-KEY (superconductivity AND broken symmetry)". The page displays 164 document results. A table lists the results, with the first entry circled in red:

Document title	Authors	Year	Source	Cited by
1 Evidence of cosmic strings by the observation of the alignment of quasar polarization axes on Mpc scale	Shuster, R.J.	2018	International Journal of Modern Physics D 27(9),1850094	0
2 Quantum Multicriticality near the Dirac-Semimetal to Band-Insulator Critical Point in Two Dimensions: A Controlled Ascent from One Dimension	Roy, B., Foster, M.S.	2018	Physical Review X 8(1),011049	2

Abstract, metrics, citing docs, related docs, keywords, all references

The screenshot shows the document details page for the paper "Quantum Multicriticality near the Dirac-Semimetal to Band-Insulator Critical Point in Two Dimensions: A Controlled Ascent from One Dimension" by Roy, B., Foster, M.S. The page includes the abstract, metrics (249 citations in Scopus, 4.92 field-weighted citation impact), and a list of citing documents. A red arrow points to the "Cited by 2 documents" section with the text "link for citing docs". At the bottom, a red arrow points down with the text "scroll down for all 107 refs".

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Document details

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Physical Review X, Open Access
Volume 8, Issue 1, 26 March 2018, Article number 0123049

Quantum Multicriticality near the Dirac-Semimetal to Band-Insulator Critical Point in Two Dimensions: A Controlled Ascent from One Dimension

DOI: 10.1103/PhysRevX.8.0123049

Roy, B.T., Foster, M.S., et al.

Department of Physics and Astronomy, Rice University, Houston, TX 77005, United States
Rice Center for Quantum Materials, Rice University, Houston, TX 77005, United States

Abstract

We compute the effects of generic short-range interactions on gapless electrons residing at the quantum critical point separating a two-dimensional Dirac semimetal and a symmetry-preserving band insulator. The electronic dispersion at this critical point is anisotropic $(E_{\pm} = \pm \sqrt{v^2 k_x^2 + W^2 k_y^2})$ with $n=2$, which results in unconventional scaling of thermodynamic and transport quantities. Because of the vanishing density of states $\rho(E) \sim |E|^{n-1}$, the anisotropic semimetal (ASM) is stable against weak short-range interactions. However, for stronger interactions, the direct Dirac-semimetal to band-insulator transition can either (i) become a fluctuation-driven first-order transition (although unlikely in a particular microscopic model considered here, the anisotropic honeycomb lattice extended Hubbard model) or (ii) get avoided by an intervening broken-symmetry phase. We perform a controlled renormalization group analysis with the small parameter $\epsilon = 1/n$, augmented with a $1/n$ expansion (parametrically suppressing quantum fluctuations in the higher dimension) by perturbing away from the one-dimensional limit, realized by setting $\epsilon = 0$ and $n \rightarrow \infty$. We identify charge density wave (CDW), antiferromagnet (AFM), and spin-1 wave **superconductivity** as the three dominant candidates for **broken symmetry**. The ascent of any such order at strong coupling $(\epsilon \rightarrow 0)$ takes place through a continuous quantum phase transition across an interacting multicritical point, where the ordered phase, band insulator, Dirac, and anisotropic semimetal meet. We also present the phase diagram of an extended Hubbard model for the ASM, obtained via the controlled deformation of its counterpart in one dimension. The latter displays spin-charge separation and coexists in CDW, spin-density wave, and Luther-Emery liquid phases at arbitrarily weak coupling. The spin density wave and Luther-Emery liquid phases deform into pseudospin SU(2)-symmetric quantum critical points separating the ASM from the AFM and superconducting orders, respectively. Our phase diagram shows an intriguing interplay among CDW, AFM, and n -wave paired states that can be germane for a uniaxially strained optical honeycomb lattice for ultracold fermion atoms, or the organic compound θ -RbClO₄. © 2018 authors. Published by the American Physical Society.

View references (107)

Reprints Database Information

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Indexed keywords

Engineering controlled terms:

Antiferromagnet Charge density wave Coulomb Density of states Heterostructure Hubbard model Isinglike Optical lattice Phase diagram Quantum electronics Separation Spin wave Spin density wave Statistical mechanics

Metrics

269 Citations in Scopus

4.92 h^m Field-Weighted Citation Impact

PlumX Metrics

Usage, Citations, Mentions, Inval, Files and Clusters, Social Topics

Cited by 2 documents

Phase transition with trivial quantum entanglement in an anisotropic Weyl semimetal
Li, X., Wang, J.-R., Liu, G.-Z., et al. (2018) Physical Review B

Invariant quantum multicriticality of two-dimensional Dirac fermions
Roy, B., Goswami, P., Jun08, V. (2018) Physical Review B

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Roy, B., Goswami, P., Jun08, V. (2018) Physical Review B

Emergent Non-Fermi-Liquid at the Quantum Critical Point of a Topological Phase Transition in Two Dimensions

Voilà!

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PHYSICAL REVIEW X

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Open Access

Quantum Multicriticality near the Dirac-Semimetal to Band-Insulator Critical Point in Two Dimensions: A Controlled Ascent from One Dimension

Bitan Roy and Matthew S. Foster
Phys. Rev. X **8**, 0123049 – Published 26 March 2018

Article References Citing Articles (2) PDF HTML Export Citation

ABSTRACT

We compute the effects of generic short-range interactions on gapless electrons residing at the quantum critical point separating a two-dimensional Dirac semimetal and a symmetry-preserving band insulator. The electronic dispersion at this critical point is anisotropic $(E_{\pm} = \pm \sqrt{v^2 k_x^2 + W^2 k_y^2})$ with $n = 2$, which results in unconventional scaling of thermodynamic and transport quantities. Because of the vanishing density of states $\rho(E) \sim |E|^{n-1}$, this anisotropic semimetal (ASM) is stable against weak short-range interactions. However, for stronger interactions, the direct Dirac-semimetal to band-insulator transition can either (i) become a fluctuation-driven first-order transition (although unlikely in a particular microscopic model considered here, the anisotropic honeycomb lattice extended Hubbard model) or (ii) get avoided by an intervening broken-symmetry phase. We perform a controlled renormalization group analysis with the small parameter $\epsilon = 1/n$, augmented with a $1/n$ expansion (parametrically suppressing quantum fluctuations in the higher dimension) by perturbing away from the one-dimensional limit, realized by setting $\epsilon = 0$ and $n \rightarrow \infty$. We identify charge density wave (CDW),

Issue
Vol. 8, Iss. 1 — January - March 2018

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You can also search by author

Use the "Author search"

The screenshot shows the Scopus Author search interface. At the top, there is a navigation bar with 'Search', 'Sources', 'Alerts', 'Lists', 'Help', 'SciVal', 'Register', and 'Login'. Below this is a blue header for 'Author search' with a 'Compare sources' link. A help box explains the Scopus Author Identifier algorithm. The main search area has tabs for 'Documents', 'Authors', 'Affiliations', and 'Advanced'. The 'Authors' tab is circled in red, and a red arrow points from the text 'Use the "Author search"' to it. Below the tabs are input fields for 'Author last name' (with example 'e.g. Smith'), 'Author first name' (with example 'e.g. J.L.'), 'Affiliation' (with example 'e.g. University of Toronto'), and 'ORCID' (with example 'e.g. 1111-2222-3333-4444'). There are 'Search Q.' buttons for each field and a 'Show exact matches only' checkbox.

You can also search by author

Type in author surname and first name or initials

This screenshot is identical to the one above, but with the 'Author last name' field containing 'Fradkin' and the 'Author first name' field containing 'Eduardo'. Red arrows point from the text 'Type in author surname and first name or initials' to these two fields. The 'Authors' tab remains highlighted.

You can also search by author

Turn on "exact matches" to narrow search

The screenshot shows the Scopus Author search page. At the top, there is a navigation bar with 'Search', 'Sources', 'Alerts', 'Lists', 'Help', 'SciVal', 'Register', and 'Login'. Below this is a blue header with 'Author search' and a 'Compare sources' link. A blue information box explains the Scopus Author Identifier algorithm. The main search area has tabs for 'Documents', 'Authors', 'Affiliations', and 'Advanced'. Under 'Authors', there are two input fields: 'Author last name' with 'Fradkin' and 'Author first name' with 'Eduardo'. Below these is an 'Affiliation' field with a placeholder 'e.g. University of Toronto'. A checkbox labeled 'Show exact matches only' is checked. There is also an 'ORCID' field. A red arrow points from the text 'Turn on "exact matches" to narrow search' to the checked checkbox.

You can also search by author

Leave "Affiliation" blank for more results

The screenshot shows the Scopus Author search page, identical to the one above. However, the 'Affiliation' field is now blank. A red arrow points from the text 'Leave "Affiliation" blank for more results' to the empty 'Affiliation' input field.

Select the correct author...

Scopus Search Sources Alerts Lists Help SciVal Register Login

2 author results About Scopus Author Identifier

Author last name "Fradkin", Author first name "Eduardo"

Show exact matches only

Refine results

Source title

Author	Documents	Subject area	Affiliation	City	Country/Territory
1 Fradkin, Eduardo H. Fradkin, E. Fradkin, E. H. Fradkin, Eduardo	225	Physics and Astronomy ; Materials Science ; Mathematics ; ...	University of Illinois at Urbana-Champaign	Urbana	United States
2 Fradkin, Eduardo	1	Mathematics ; Physics and Astronomy ; Precision Sciences ; ...	University of Illinois at Urbana-Champaign	Urbana	United States

and click on "Show documents"

And we get Eduardo's 226 papers

Scopus Search Sources Alerts Lists Help SciVal Register Login

226 document results View secondary documents

ALI-ID ("Fradkin, Eduardo H." 35498145900) OR ALI-ID ("Fradkin, Eduardo" 57203044407)

Edit Save Set alert Set feed

Search within results...

Analyze search results Show all abstracts Sort on: Date (newest)

Refine results

Access type

Year

Document title	Authors	Year	Source	Cited by
1 Scrambling in the quantum Lifshitz model	Pamadela, E., Fradkin, E.	2018	Journal of Statistical Mechanics: Theory and Experiment 2018(12):063102	0
2 Pair density waves in superconducting vortex halos	Wang, Y., Edkins, S.D., Hamidian, M.H., Fradkin, E., Kivelson, S.A.	2018	Physical Review B 97(17):174510	5

which can also be sorted in a variety of ways

Scopus can dump citation data to your reference manager by magic

Analyze search results Show all abstracts Sort on: Date (newest)

All **Export** Download View citation overview View cited by Add to List ...

	Document title	Authors	Year	Source
<input checked="" type="checkbox"/> 1	Scrambling in the quantum Lifshitz model	Plamadeala, E., Fradkin, E.	2018	Journal of Statistical Mechanics: Theory and Experiment 2018(6),063102
	View abstract Download PDF View at Publisher Related documents			
<input checked="" type="checkbox"/> 2	Pair density waves in superconducting vortex halos	Wang, Y., Edkins, S.D., Hamidian, M.H., (...), Fradkin, E., Kivelson, S.A.	2018	Physical Review B 97(17),174510
	View abstract Download PDF View at Publisher Related documents			
<input checked="" type="checkbox"/> 3	Loop models, modular invariance, and three-dimensional bosonization	Goldman, H., Fradkin, E.	2018	Physical Review B 97(19),195112

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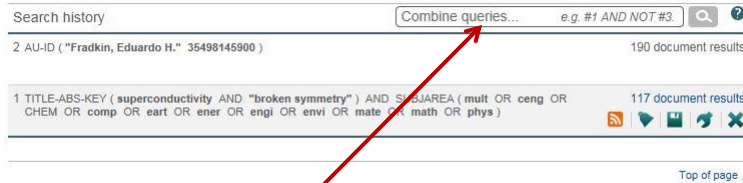
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<input checked="" type="checkbox"/> Author(s)	<input type="checkbox"/> Affiliations	<input type="checkbox"/> Abstract	<input type="checkbox"/> Number	<input type="checkbox"/> Tradenames & manufacturers
<input checked="" type="checkbox"/> Document title	<input type="checkbox"/> Serial identifiers (e.g. ISSN)	<input type="checkbox"/> Author keywords	<input type="checkbox"/> Acronym	<input type="checkbox"/> Accession numbers & chemicals
<input checked="" type="checkbox"/> Year	<input type="checkbox"/> PubMed ID	<input type="checkbox"/> Index keywords	<input type="checkbox"/> Sponsor	<input type="checkbox"/> Conference information
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<input checked="" type="checkbox"/> DOI	<input type="checkbox"/> Abbreviated source title			

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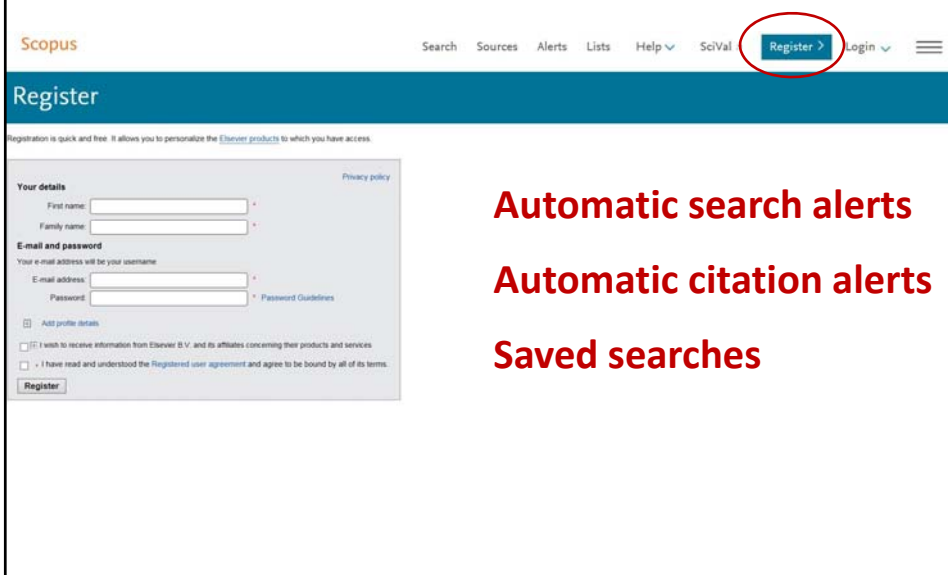
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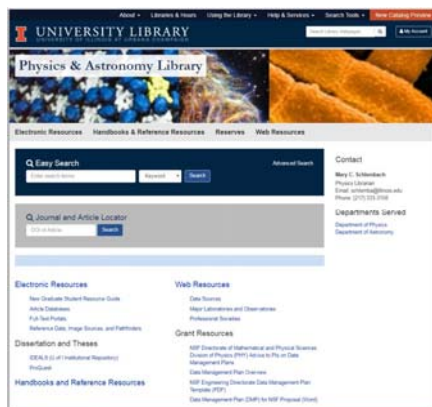
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