



IOPscience

User guide

iopscience.org

IOP Publishing

Search...

Perform a quick search

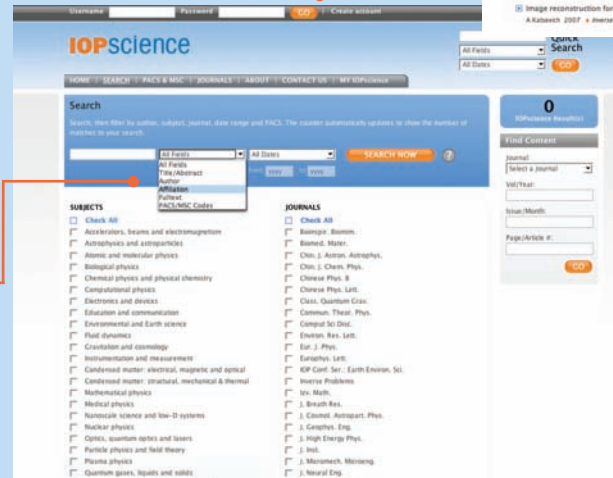
This is a **fielded search** from the homepage or from the top right of every page. The default is set to search all fields, but you can narrow it down to Title/Abstract, Author, Affiliation and/or Full Text, as well as Date Range.

Make it personal

Creating an account will allow you to benefit from **personalization** options, including article tagging and saved searches in My IOPscience.

Use the search channel

This is also a **fielded search** with the default set to all fields. You can pre-filter your search by selecting **subjects**, **journals** and **date ranges**. You can also enter the specific dates you wish to search.



Pinpoint content

Find a **specific article** quickly and easily using the content finder. You can narrow right down to a specific journal title, volume and issue number.

Popular articles


The most downloaded and most cited articles are highlighted.

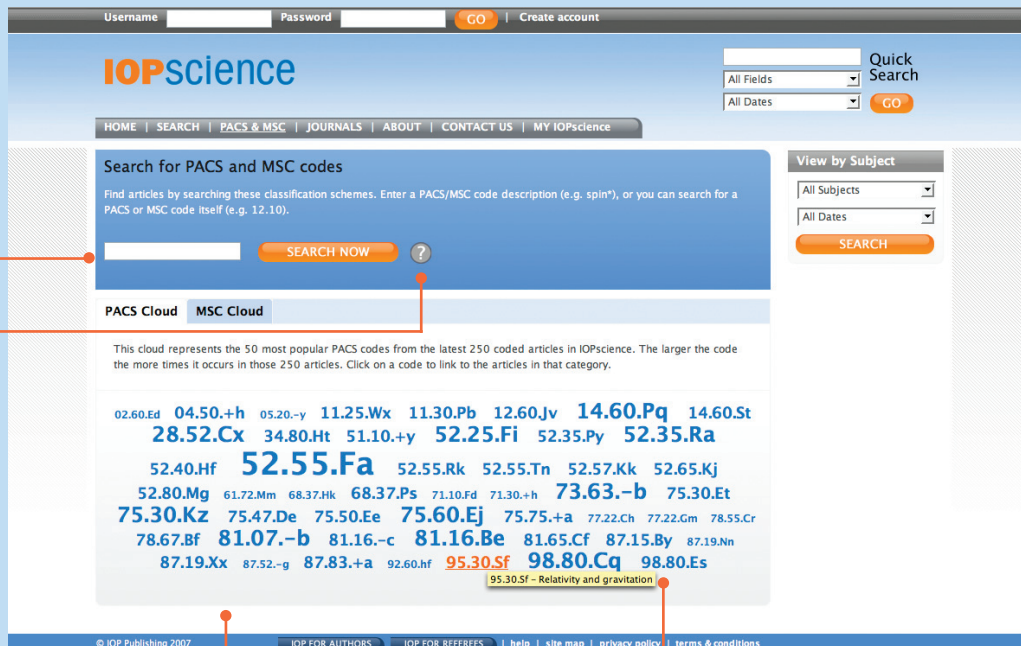
Classified information

IOPscience content has been classified by over **6,000 PACS** and **MSC codes** in physics, astronomy and math making each and every article highly discoverable. You can interact with these codes in a multitude of ways.

Use the PACS or MSC code

If you know the PACS or MSC code, you can enter it into the search box, or enter your search term to find the relevant codes.

Click on the  to find out more about PACS and MSC codes or visit www.aip.org/pacs and www.ams.org/msc




Username Password | [Create account](#)

iopscience

HOME | SEARCH | PACS & MSC | JOURNALS | ABOUT | CONTACT US | MY IOPscience

Search for PACS and MSC codes

Find articles by searching these classification schemes. Enter a PACS/MS code description (e.g. spin*), or you can search for a PACS or MSC code itself (e.g. 12.10).



PACS Cloud **MSC Cloud**

This cloud represents the 50 most popular PACS codes from the latest 250 coded articles in IOPscience. The larger the code the more times it occurs in those 250 articles. Click on a code to link to the articles in that category.

02.60.Ed 04.50.+h 05.20.-y 11.25.Wx 11.30.Pb 12.60.Jv 14.60.Pq 14.60.St
28.52.Cx 34.80.Ht 51.10.+y 52.25.Fi 52.35.Py 52.35.Ra
52.40.Hf 52.55.Fa 52.55.Rk 52.55.Tn 52.57.Kk 52.65.Kj
52.80.Mg 61.72.Mm 68.37.Hk 68.37.Ps 71.10.Fd 71.30.+h 73.63.-b 75.30.Et
75.30.Kz 75.47.De 75.50.Ee 75.60.Ej 75.75.+a 77.22.Ch 77.22.Gm 78.55.Cr
78.67.Bf 81.07.-b 81.16.-c 81.16.Be 81.65.Cf 87.15.By 87.19.Nn
87.19.Xx 87.52.-g 87.83.+a 92.60.Hf 95.30.Sf 98.80.Cq 98.80.Es
95.30.Sf - Relativity and gravitation

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Tag clouds

You can also use the PACS and MSC clouds to discover relevant content. These clouds visually represent the 50 most popular codes from the latest 250 articles in IOPscience. The larger the font, the more times that code appears in the last 250 articles.

Mouse over a code to see its full description.

Explore...

IOP journal titles also have their own homepages within IOPscience.

Journal search

Run a quick fielded search which is defaulted to search specifically within this journal.

Accessing journal content

- Set up an RSS feed or e-mail alert to receive the latest content.
- Link straight to the latest complete issue...
- Use the volume listings if you are looking for something specific...
- See the very latest articles to be published in the journal...
- Link straight to the most downloaded and most cited articles...


The screenshot shows the IOPscience website interface for the journal 'Nanotechnology'. At the top, there is a navigation bar with 'HOME | SEARCH | PACS & MSC | JOURNALS | ABOUT | CONTACT US | MY IOPscience'. A search box is located in the top right corner, with a 'Quick Search' button and a 'GO' button. Below the navigation bar, the journal title 'Nanotechnology' is prominently displayed, along with a description: 'Nanotechnology is essential reading for anyone who is interested in the latest advances in nanoscale science and technology. It encompasses the understanding of the fundamental physics, chemistry, biology and technology of nanometre-scale objects and how such objects can be used in the areas of computation, sensors, nanostructured materials and nano-biotechnology.' The page also features a '3.037 2006 Impact Factor' badge. On the right side, there is a 'Journal Links' section with links to 'Journal home', 'Scope', 'Editorial board', 'Submission information', 'Author benefits', 'Abstracted in', 'Cover Gallery', 'Publishing team', and 'nanotechweb.org'. Below this, there is a 'View by Subject' section with a search box and a 'SEARCH' button. The main content area is divided into several sections: 'Editorial & News' with 'Nanotechnology Journal Highlights', 'Volume Listings' with 'Current volume' and 'Journal archive', 'Nanotechnology Special Issue: Design and function of molecular and bioelectronics devices', and 'Latest Articles' with a list of recent publications. The 'Latest Articles' section includes titles like 'Preparations of bifunctional polymeric beads simultaneously incorporated with fluorescent quantum dots and magnetic nanocrystals' and 'An approach to fabricating chemical sensors based on ZnO nanorod arrays'. The page also features a 'Create an Alert' button and an 'RSS this ToC' button.

Filter...

IOPscience's sophisticated filtering system will help you to drill further into your search results.

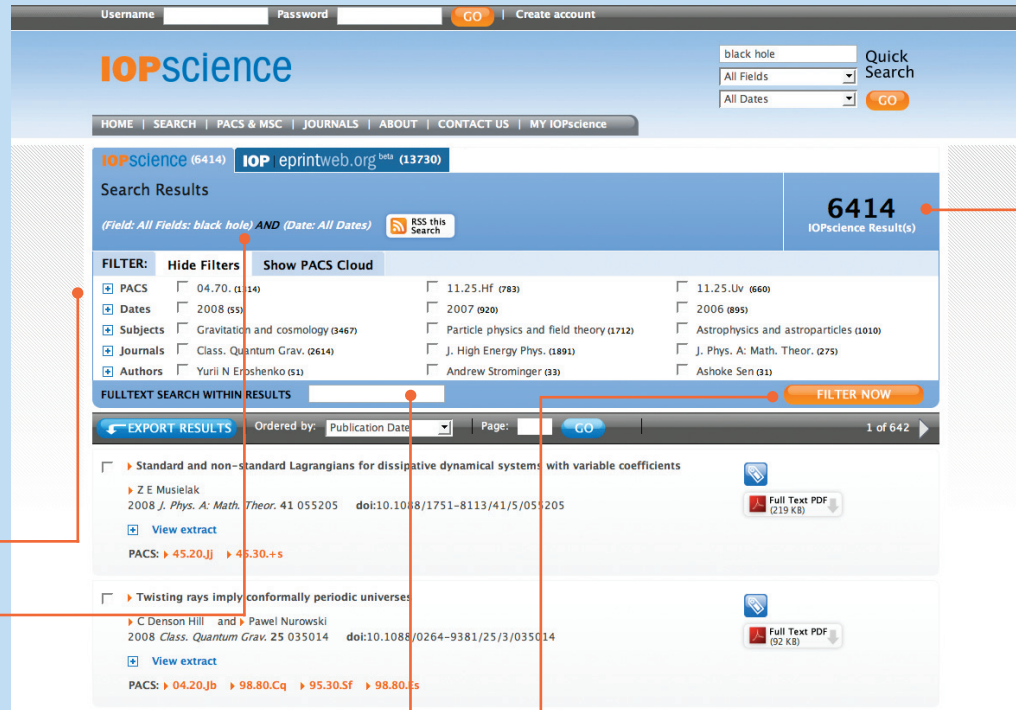
You can filter by the following categories:

- PACS
- Dates
- Subjects
- Journals
- Authors


Use the blue  buttons to expand each filter category, and then check the relevant filter options.

You can keep track of your search path in the top of the filter panel.

You can also enter a further search term to perform a full text search within your initial set of results.




The screenshot shows the IOPscience search results interface. At the top, there are fields for Username and Password, a GO button, and a Create account link. The IOPscience logo is prominently displayed. A navigation bar includes links for HOME, SEARCH, PACS & MSC, JOURNALS, ABOUT, CONTACT US, and MY IOPscience. On the right, there is a Quick Search section with input fields for search terms, dropdown menus for 'All Fields' and 'All Dates', and a GO button. The main content area shows search results for 'black hole' and 'IOP eprintweb.org'. A search results counter in the top right corner displays '6414 IOPscience Result(s)'. Below this, there is a filter panel with a 'FILTER' section containing expandable categories: PACS, Dates, Subjects, Journals, and Authors. Each category has a blue plus icon and a list of options with checkboxes. A 'Fulltext search within results' field is located below the filter panel. At the bottom of the filter panel, there is an 'EXPORT RESULTS' button, a dropdown for 'Ordered by: Publication Date', a 'Page:' field, a 'GO' button, and a page indicator '1 of 642'. The search results list includes entries like 'Standard and non-standard Lagrangians for dissipative dynamical systems: with variable coefficients' and 'Twisting rays imply conformally periodic universes', each with a 'View extract' link and a 'Full Text PDF' download icon.

When you hit , the results list will update to correspond with your chosen filters.

The useful **results counter** immediately tells you how many results you've returned. With each filter that you apply, your count will be adjusted, so you will always know how many articles will match your query.

Discover...

RSS feeds

Click on the  button to set up a feed for any search, so that new content matching your specific search criteria will be fed straight to your desktop.

Export your results

You can export your results into your preferred format.

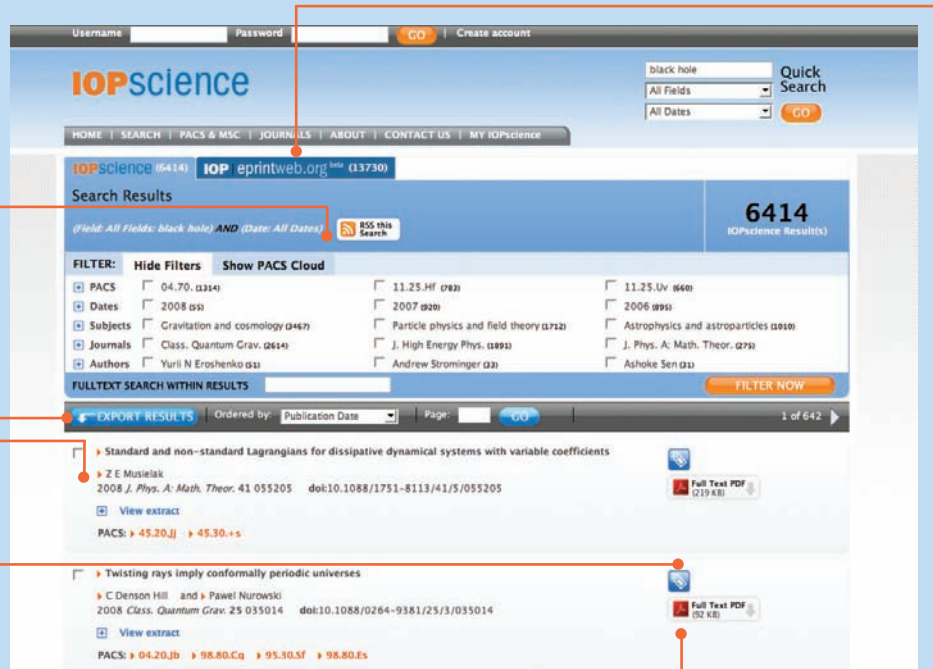
Link to other papers by the same authors.

Article tagging

Tag any article in IOPscience with your own descriptions.

Enhanced PDFs

PDF coversheets are interactive. With one click you can link to articles which relate to the one previously downloaded.



The screenshot displays the IOPscience search results interface. At the top, there are login fields for 'Username' and 'Password', a 'GO' button, and a 'Create account' link. The IOPscience logo is prominently displayed. Below the logo is a navigation bar with links for 'HOME', 'SEARCH', 'PACS & MSC', 'JOURNALS', 'ABOUT', 'CONTACT US', and 'MY IOPscience'. The search results section shows a search for 'black hole' with 6414 results. A filter bar allows users to 'Hide Filters' or 'Show PACS Cloud'. The results list includes titles, authors, and PACS codes. For example, one result is 'Standard and non-standard Lagrangians for dissipative dynamical systems with variable coefficients' by Z E Musielak, published in 2008. Another result is 'Twisting rays imply conformally periodic universes' by C Denson Hill and Pawel Nurowski, published in 2008. Each result has a 'Full Text PDF' download button and a 'View extract' link. The page is numbered '1 of 642'.

E-print results

See e-print results from **eprintweb.org** when you run a keyword search. E-prints show non-peer-reviewed results from **eprintweb.org** (based on Cornell University's arXiv.org).

Social bookmarking

A popular way to store, classify, share and search links, these facilities are available from the abstract page of every article.

Find related articles

By clicking on [RELATED ARTICLES](#), you will find more articles similar to the one you are currently viewing. You can also click on the PACS, MSC and subject links to find other articles classified in the same way.

Linked references and citations

These allow you to explore backward and forward links between papers. References are also linked within the full text PDFs, allowing you to read cited articles while studying a paper.

Keep track

See the last 10 articles you viewed, at the abstract level, and the last 10 searches you made. You can also save your searches.

Username Password Create account

IOPscience

HOME | SEARCH | PACS & MSC | JOURNALS | ABOUT | CONTACT US | MY IOPscience

Quick Search

All Fields
All Dates
All Journals | This journal only

Ponzano-Regge model revisited: III. Feynman diagrams and effective field theory

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Journal [Classical and Quantum Gravity](#)

Issue [Volume 23, Number 6](#)

Citation Laurent Freidel¹, and Etera R Livine
2006 *Class. Quantum Grav.* 23 2021 doi:10.1088/0264-9381/23/6/012

Article **References** **Cited By** **Related Articles**

Abstract
We study the no-gravity limit $G_N \rightarrow 0$ of the Ponzano-Regge amplitudes with massive particles and show that we recover in this limit Feynman graph amplitudes (with the Hadamard propagator) expressed as an Abelian spin foam model. We show how the G_N expansion of the Ponzano-Regge amplitudes can be resummed. This leads to the conclusion that the effective dynamics of quantum particles coupled to quantum 3D gravity can be expressed in terms of an effective new non-commutative field theory which respects the principles of doubly special relativity. We discuss the construction of Lorentzian spin foam models including Feynman propagators.

PACS
[04.60.Pp](#) Loop quantum gravity, quantum geometry, spin foams
[11.10.Nx](#) Noncommutative field theory
[02.40.Gh](#) Noncommutative geometry
[04.02.+v](#) Quantum fields in curved spacetime

MSC
[81T75](#) Noncommutative geometry methods (See also 46L85, 46L87, 58B34)
[83Cxx](#) General relativity
[81T18](#) Feynman diagram
[81T45](#) Topological field theories (See also 57R56, 58Dxx)

Subjects
[Gravitation and cosmology](#)

Dates
Issue 6 (21 March 2006)
Received 11 November 2005 Published 6 March 2006
[Back to search results](#)

[Last 10 viewed articles](#) [Last 10 searches](#)

1. Ponzano-Regge model revisited: III. Feynman diagrams and effective field theory
Laurent Freidel and Etera R Livine
2006 *Class. Quantum Grav.* 23 2021

Personalize...

Create an account to benefit from personalization options, and make use of My IOPscience:

- See the latest articles in your field on the homepage.
- Tag articles with your own descriptions. Your tagged articles appear in a cloud on the IOPscience homepage, and on My IOPscience.
- Save your searches and retrieve new results on your next visit.
- Set up e-mail alerts and manage them in My IOPscience.

The screenshot shows the 'My IOPscience' user interface. At the top, there is a navigation bar with 'Welcome czh | Edit account | Logout' and the 'IOPscience' logo. A search bar is located in the top right corner with 'All Fields' and 'All Dates' dropdown menus and a 'GO' button. Below the navigation bar, there are tabs for 'HOME | SEARCH | PACS & MSC | JOURNALS | ABOUT | CONTACT US | MY IOPscience'. The main content area is titled 'My IOPscience' and includes a brief introduction: 'Introducing the quick and easy way to personalise your IOPscience. Use the settings in this section to control what you see and the way you see it.' To the right, there is a 'My IOPscience Article Tags' section with a cloud of tags including 'black', 'black-hole', 'boson', 'colloid', 'dark-energy', 'effects', 'gravitational-instability', 'gravitational-waves', 'gravitron', 'hole', 'high injection', 'lovely', 'lung-injury', 'non-linear', 'plasma', 'quark-gluon', 'silica', 'spectrum', 'thunder', 'yang-mills', and 'zero-pressure'. Below this, there are tabs for 'Saved Searches', 'Tagged Articles', and 'Alerts'. The 'Saved Searches' tab is active, showing a table of saved searches. The table has columns for 'Parameters/Name', 'Results', and 'Delete'. Two searches are listed: 1. '(Field: Author: Tsvi Piran) AND (Date: From/To: 1992 - 1992)' with 0 results, saved on 28/01/2008 03:58:35. 2. '(Field: Author: smythe) AND (Date: All Dates)' with 0 results, saved on 24/01/2008 11:55:33. Red lines connect the bullet points on the left to specific features in the screenshot: the first bullet points to the 'My IOPscience Article Tags' cloud, the second to the 'Tagged Articles' tab, the third to the 'Saved Searches' table, and the fourth to the 'Alerts' tab.

What's next?

IOPscience is available through an electronic-only license, making it accessible to every researcher at your institution.

Visit iopscience.org for more information.

Take a Tour of the highlights at iopscience.org.

Contact us at the address below or get in touch with your Regional Representative.

Go to iopscience.org and click on 'contact us' for details of your local representative.

Request a free institutional trial at trial@iopscience.org.

Contact us

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