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GUIA DO USUÁRIO



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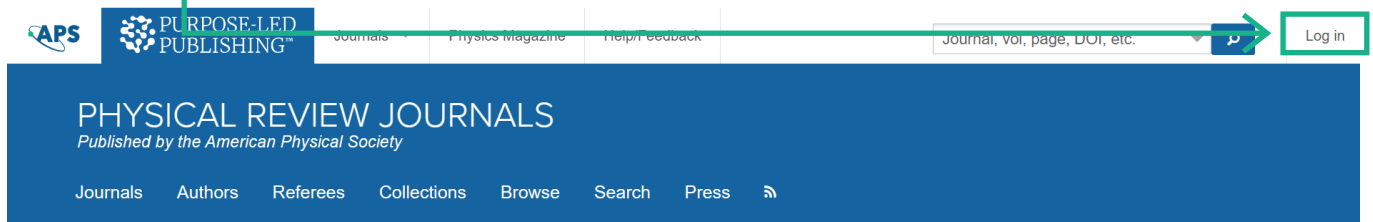
1



REGISTRO INDIVIDUAL INSTITUCIONAL

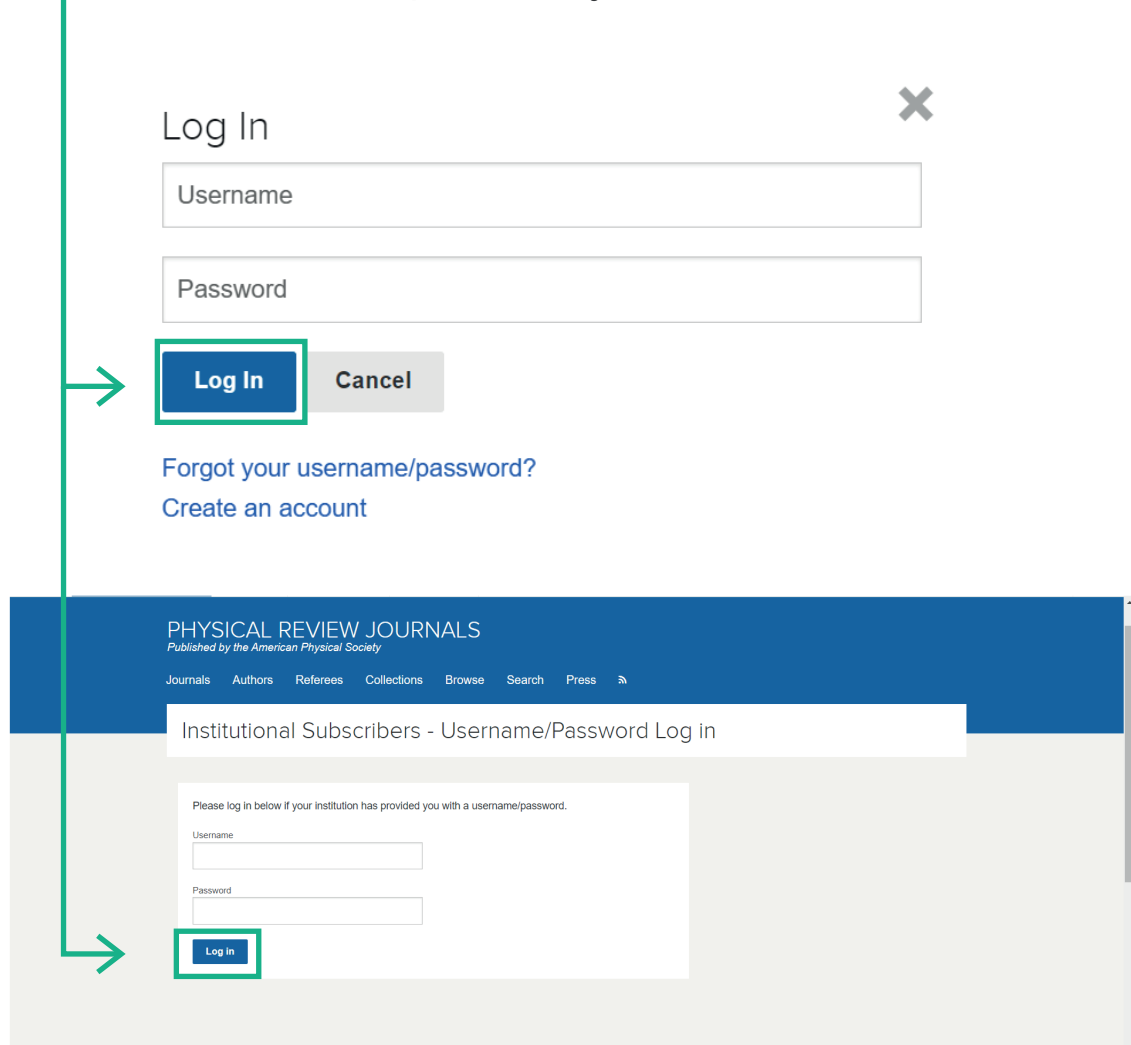
1

Para fazer login, clique na opção “Log in” na página inicial.



2

Selecione como gostaria de fazer login, como cliente atual, novo usuário ou por instituição.



2

COMO POSSO PESQUISAR ?



1

Digite na barra de pesquisa a palavra-chave, o nome do periódico, o DOI ou outras informações que deseja usar para sua pesquisa.

The screenshot shows the top navigation bar of the Physical Review Journals website. The search bar is highlighted with a green box, and a green arrow points to it from the number 1. The search bar contains the text "Journal, vol, page, DOI, etc." and a magnifying glass icon. Below the search bar, the website header includes the APS logo, the text "PURPOSE-LED PUBLISHING", and a list of links: Journals, Physics Magazine, Help/Feedback, Journals, Authors, Referees, Collections, Browse, Search, Press, and a RSS icon. The main content area features a featured article titled "Guiding of Charged Particle Beams in Curved Plasma-Discharge Capillaries" by R. Pompili et al., published in Phys. Rev. Lett. 132, 215001 (2024). To the right of the article are buttons for "SUBMIT YOUR ARTICLE" and "BECOME A REFEREE", and a section for "Email Alerts".

2

Clique no ícone da lupa para iniciar a pesquisa. Os periódicos podem ser acessados na lista que aparece quando você clica em "Journals".

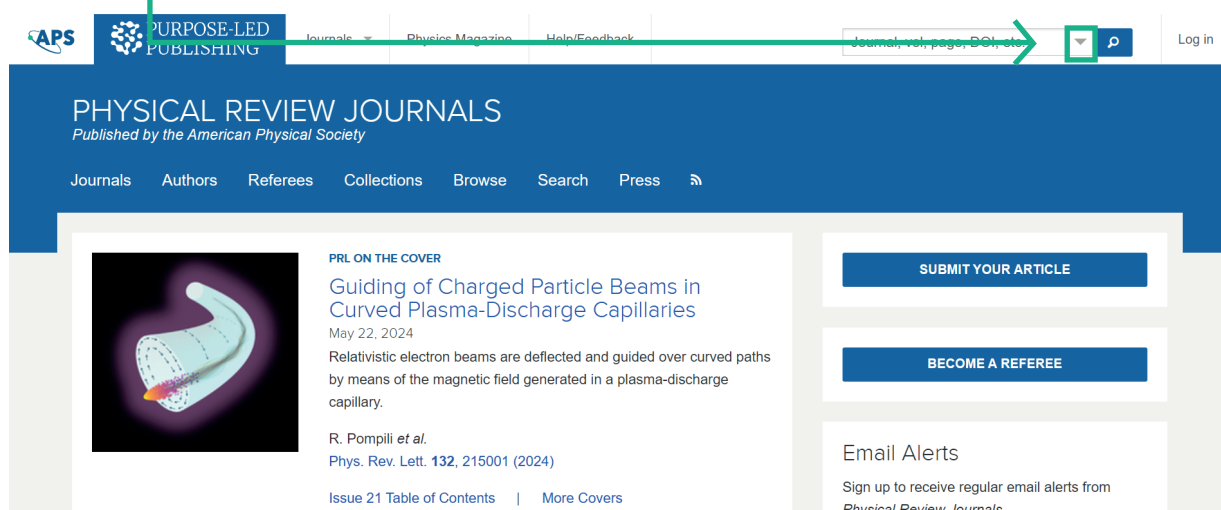
This screenshot is identical to the one above, showing the Physical Review Journals website. However, the green box and arrow from the number 2 point to the magnifying glass icon inside the search bar, indicating the action to click the search icon to initiate the search.

3

PESQUISA AVANÇADA

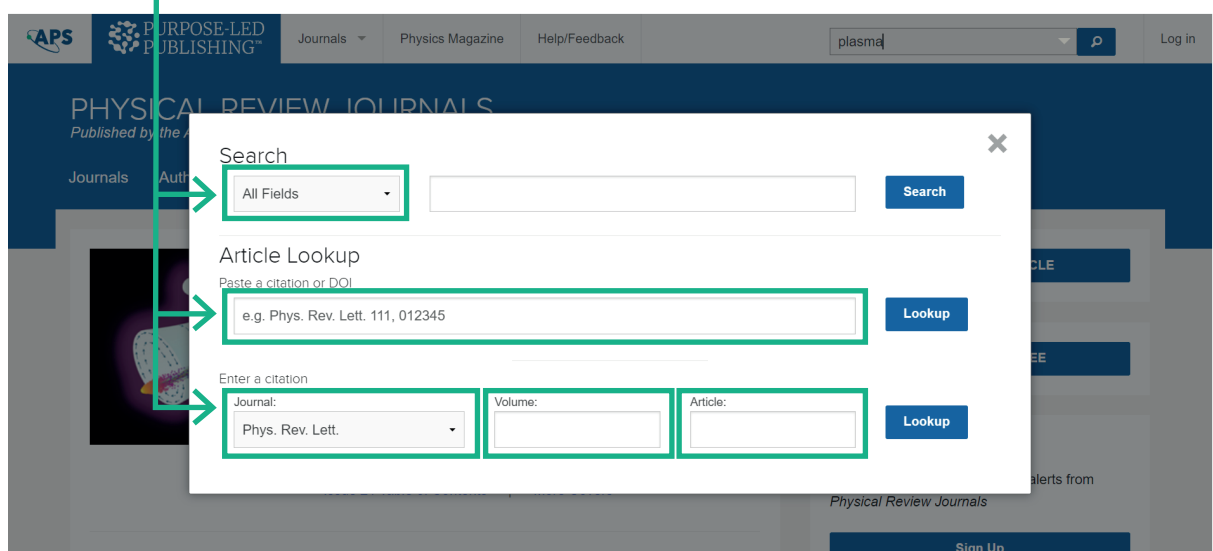
1

Para realizar uma pesquisa avançada, pressione a seta na barra de pesquisa.



2

Selecione os filtros que deseja usar para sua pesquisa e, quando estiver pronto, clique no botão "search" (pesquisar).



4



COMO ENCONTRAR

1



Localize o artigo de seu interesse.

Results / **1-20 of 54,899**

You searched for **plasma** ✕

Sort

Most Relevant

Results Per Page

10

PhySH Concept

☒ ALL (54,899)

☐ Optics & lasers (2,635)

☐ Relativistic heavy-ion collisions (2,147)

☐ Quantum field theory (1,749)

☐ 3-dimensional systems (1,602)

☐ Optical & microwave phenomena (1,586)

PR79 citationsPDFHTML

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Phys. Rev. **38**, 1219 (1931) - Published 15 September 1931

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PR59 citationsPDFHTML

Effects of Plasma Boundaries in Plasma Oscillations

D. Bohm and E. P. Gross

Phys. Rev. **79**, 992 (1950) - Published 15 September 1950

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1

Para uma pesquisa melhor, filtre por resultados, tipos de artigos, categorias, revista, data etc.

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☐ Quantum field theory (1,749)
☐ 3-dimensional systems (1,602)
☐ Optical & microwave phenomena (1,586)
☐ Cosmology (1,542)

PhySH Discipline

☒ ALL (54,899)
☐ Condensed Matter, Materials & Applied Physics (5,413)
☐ Atomic, Molecular & Optical (3,387)
☐ Particles & Fields (3,300)
☐ Plasma Physics (2,736)
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☐ Featured in Physics (607)
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Category

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☐ Milestone (9)

Article Type

☒ ALL (54,899)
☐ Article (37,341)
☐ Letter (12,696)
☐ Rapid Communication (1,993)
☐ Brief Report (1,364)
☐ Review (438)
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Journal

☒ ALL (54,899)
☐ Phys. Rev. Lett. (12,557)
☐ Phys. Rev. B (9,942)
☐ Phys. Rev. E (7,975)
☐ Phys. Rev. D (7,792)
☐ Phys. Rev. A (7,442)
☐ Phys. Rev. C (3,271)
☐ Phys. Rev. Applied (984)
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6

RECUPERAR INFORMAÇÕES

BAIXAR PDF

1

Selecione a opção “PDF” no menu superior.

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Light propagation in a plasma on Kerr spacetime. II. Plasma imprint on photon orbits

Volker Perlick and Oleg Yu. Tsupko
Phys. Rev. D **109**, 064063 – Published 21 March 2024

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ABSTRACT

In this paper, light propagation in a pressure-free nonmagnetized plasma on Kerr spacetime is considered, which is a continuation of our previous study [V. Perlick and O. Y. Tsupko, Light propagation in a plasma on Kerr spacetime: Separation of the Hamilton-Jacobi equation and calculation of the shadow, *Phys. Rev. D* **95**, 104003 (2017)]. It is assumed throughout that the plasma density is of the form that allows for the separability of the Hamilton-Jacobi equation for light rays, i.e., for the existence of a Carter constant. Here we focus on the analysis of different types of orbits and find several peculiar phenomena which do not exist in the vacuum case. We start with studying spherical orbits, which are contained in a coordinate sphere $r = \text{constant}$, and conical orbits, which are contained in a coordinate cone $\vartheta = \text{constant}$. In particular, it is revealed that in the ergoregion in the presence of a plasma there can exist two different spherical light rays propagating through the same point. Then we study circular orbits and demonstrate that,

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Vol. 109, Iss. 6 — 15 March 2024

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PHYSICAL REVIEW D **109**, 064063 (2024)

Light propagation in a plasma on Kerr spacetime. II. Plasma imprint on photon orbits

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In this paper, light propagation in a pressure-free nonmagnetized plasma on Kerr spacetime is considered, which is a continuation of our previous study [V. Perlick and O. Y. Tsupko, Light propagation in a plasma on Kerr spacetime: Separation of the Hamilton-Jacobi equation and calculation of the shadow, *Phys. Rev. D* **95**, 104003 (2017)]. It is assumed throughout that the plasma density is of the form that allows for the separability of the Hamilton-Jacobi equation for light rays, i.e., for the existence of a Carter constant. Here we focus on the analysis of different types of orbits and find several peculiar phenomena which do not exist in the vacuum case. We start with studying spherical orbits, which are contained in a coordinate sphere $r = \text{constant}$, and conical orbits, which are contained in a coordinate cone $\theta = \text{constant}$. In particular, it is revealed that in the ergoregion in the presence of a plasma there can exist two different spherical light rays propagating through the same point. Then we study circular orbits and demonstrate that, contrary to the vacuum case, circular orbits can exist off the equatorial plane in the domain of outer communication of a Kerr black hole. Necessary and sufficient conditions for that are formulated. We also find a compact equation for circular orbits in the equatorial plane of the Kerr metric, with several examples developed. Considering the light deflection in the equatorial plane, we derive a new exact formula for the deflection angle which has the advantage of being directly applicable to light rays both inside and outside of the ergoregion. Remarkably, the possibility of a nonmonotonic behavior of the deflection angle as a function of the impact parameter is demonstrated in the presence of a nonhomogeneous plasma. Furthermore, in order to separate the effects of the black hole spin from the effects of the plasma, we investigate weak deflection gravitational lensing. We also add some further comments to our discussion of

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NOTIFICAÇÕES

1

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2

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