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Properties and Impacts of Ion-Acoustic Waves

Guest Editor:

Dr. Maxime Lesur

Institute Jean-Lamour, University
of Lorraine, 2 Allée André Guinier,
54000 Nancy, France

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Message from the Guest Editor

Dear Colleagues,

Ion-acoustic waves are fundamental modes in both magnetized and unmagnetized plasmas, which have been investigated for almost a century. The goals of this special issue are twofold: 1. summarize the properties and impacts of ion acoustic waves, and 2. revisit them based on state-of-the-art modelling, observations, and applications.

Ion acoustic modes and resulting turbulence impact anomalous resistivity, turbulent heating, and transport. Non-thermal or supra-thermal particles, departure from Maxwellian distributions, Cherenkov interaction, and induced scattering by ions further enrich the topic. Ion-acoustic turbulence also provides a fundamental paradigm for a plethora of more specialized applications.

Although the topic has a long history, new developments benefit from improvements in computing techniques, and experimental diagnostics. They enable new approaches to remaining open questions, such as 2D and 3D dynamics, coupling with other modes, reduced or statistical modelling of coherent wave structures.

Dr. Maxime Lesur
Guest Editor



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Special Issue



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Editor-in-Chief

Prof. Dr. D. Andrew S. Rees

Department of Mechanical
Engineering, University of Bath,
Bath BA2 7AY, UK

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Fluids Editorial Office
MDPI, St. Alban-Anlage 66
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