

Announcement of a Special Issue of *Advances in Space Research* on

## **Astrophysical Spectroscopy and Data in Investigation of the Laboratory and Space Plasmas**

Papers are invited for a special topical issue of *Advances in Space Research* (ASR) entitled “**Astrophysical Spectroscopy and Data in Investigation of the Laboratory and Space Plasmas**”.

Spectroscopy is a powerful tool for investigating space and laboratory plasma. To understand the physical environment in which spectral lines are originating from cosmological sources, astronomers need the corresponding reliable atomic and molecular data and precise laboratory measurements of spectral line properties. It is known that the investigation of spectral lines from different astrophysical sources can be a useful tool to collect data on numerous properties of objects from the solar system to the most distant quasars. For example, on the basis of observed spectra one can carry out analysis, diagnostics and modelling of different astrophysical objects from interstellar clouds of molecular hydrogen to neutron stars and quasars, in order to determine the chemical configuration of stellar atmospheres and even obtain information on thermonuclear processes in stellar interiors. Furthermore, Doppler broadening can give us information about the kinematical properties of emitting gas. Conditions in the astrophysical plasma, temperatures and densities of different species, are within much wider ranges than in the laboratory plasma, therefore, the lines from X-ray to the radio domain have been observed. Data on spectral lines and their profiles are essential for diagnostics, analysis and modelling of fusion plasma, laser produced plasma, laser design and development and various plasmas in industry and technology like light sources based on plasmas or welding and piercing of metals by laser produced plasma. The Special Issue aims to gather new results that highlight the research on the spectral line shapes as well as results in astrophysics where spectral line shapes have been used as a tool to investigate physical and kinematical properties of celestial objects.

The following topics are appropriate for this issue:

- spectra
- line profiles
- stellar spectra
- AGN spectra
- interstellar spectra
- stars
- extragalactic objects
- laboratory plasma
- fusion plasma
- lasers
- atomic and molecular data

Papers must be submitted electronically to <https://www.editorialmanager.com/AISR> to ensure that all manuscripts are correctly identified for inclusion into the special issue, authors must select “**Special Issue: Spectroscopy & data**” when they reach the "Article Type" step in the submission process. Submitted papers must be written in English and

should include full affiliation postal addresses for all authors. The general format for submission of papers can be found on the ASR Elsevier web site at

[http://www.elsevier.com/wps/find/journaldescription.cws\\_home/644/authorinstructions](http://www.elsevier.com/wps/find/journaldescription.cws_home/644/authorinstructions)

Only full-length papers will be considered for publication, subject to peer review by a minimum of two reviewers. There are no page limits although the length of the paper should be appropriate for the material being presented. While the deadline for submissions has been extended to **1 March 2022**, papers will be published electronically as soon as they are accepted. The printed issue will be assembled within a reasonable time with late papers being printed in regular issues of ASR. All articles will be typeset at no cost to the author; there is a charge for printing color figures; there is no charge for color figures on the electronic version.

**Dr. Milan S. Dimitrijević** ([mdimitrijevic@aob.rs](mailto:mdimitrijevic@aob.rs)) and **Dr. Vladimir A. Srećković** ([vlada@ipb.ac.rs](mailto:vlada@ipb.ac.rs)) are the Guest Editors for this special issue. Questions can be directed to Dr. Dimitrijević or Dr. Srećković, or to the Co-Editor for Special Issues, Dr. Peggy Ann Shea ([sssrc@msn.com](mailto:sssrc@msn.com)).