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**SLOVAK ACADEMY OF SCIENCES**

SPECIAL ISSUE

# ASTROPHYSICAL SPECTROSCOPY - A&M DATA - MODELLING

**Based on lectures presented at**
**International Meeting on Data for Atomic and Molecular Processes in Plasmas: Advances in Standards and Modelling**
**Palić, Serbia, November 12-15, 2024**

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SPECIAL ISSUE

# Astrophysical Spectroscopy - A&M DATA - Modelling

Edited by

Vladimir A. Srećković, Milan S. Dimitrijević, Aleksandra Kolarski, Mihailo R. Savić, Nikola B. Veselinović

Based on lectures presented at

**International Meeting on Data for Atomic and Molecular Processes in Plasmas: Advances in Standards and Modelling**

November 12 – 15, 2024, Palić, Serbia

Institute of Physics Belgrade, University of Belgrade

https://asspectro.ipb.ac.rs/2024/

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# PREFACE

This Special Issue on Astrophysical Spectroscopy: A&M DATA - Modelling contains selected papers from the International Meeting on Data for Atomic and Molecular Processes in Plasmas: Advances in Standards and Modelling. The conference was held from November 12 to 15, 2024, at a venue near Lake Palić, in northern Serbia. The meeting covered a wide range of topics, from fundamental studies to applications, bringing together scientists from the fields of physics, astro- and geophysics, who are engaged in various aspects of astrophysical spectroscopy, plasma physics, atomic and molecular data, databases, and Earth observation. The latest results were presented and discussed, spanning topics such as plasma physics, astrophysics, geophysics, astronomy, and related fields. The efficiency of theoretical analysis, synthesis, and modeling of various environments depends significantly on atomic data and their sources. For example, the modeling of stellar atmospheres and opacity calculations requires a vast amount of atomic data, especially since the chemical composition of a stellar atmosphere is not known a priori. Similarly, atomic data are crucial for Earth observation. Consequently, the development of databases containing atomic data, as well as advancements in astro-geoinformatics, plays an important role. This meeting provided an opportunity to address the above-mentioned aspects of spectroscopic research in plenary sessions, followed by collaborative work on special mini-projects designed to result in joint publications in international scientific journals. The conference was attended by 51 participants from 14 countries. Participants presented 7 invited lectures, 4 regular talks, 16 poster presentations, and engaged in six mini-sessions. This Special Issue contains 11 articles, covering the main themes of the conference. All papers in this issue have undergone rigorous peer review. Each submission was reviewed by at least two reviewers. The organizers would like to express their gratitude to the Ministry of Science, Technological Development, and Innovation of the Republic of Serbia for their support. We also thank the members of the scientific and local organizing committees for their assistance in planning and running the conference. The editors are particularly grateful to the reviewers for their efforts in evaluating all contributions. Finally, we acknowledge the support of the journal Contributions of the Astronomical Observatory Skalnaté Pleso. Materials from this and previous meetings, including the program, presentations, proceedings, and photos, are available at https://asspectro.ipb.ac.rs/2024/.

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