

Special Issue Reprint

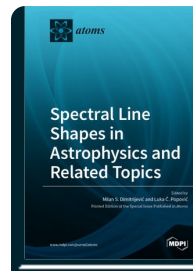
Spectral Line Shapes in Astrophysics and Related Topics

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Spectral lines, widths, and shapes are powerful tools for emitting/absorbing gas diagnostics in different astrophysical objects (from the solar system to the most distant objects in the universe—quasars). On the other hand, experimental and theoretical investigations of laboratory plasma have been applied in spectroscopic astrophysical research, especially in research on atomic data needed for line shape calculations. Data on spectral lines and their profiles are also important for diagnostics, analysis, and the 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 the welding and piercing of metals by laser-produced plasma. The papers from this book can be divided into four groups: 1. Stark broadening data for astrophysical and laboratory plasma investigations; 2. applications of spectral lines for astrophysical and laboratory plasma research; 3. spectral line phenomena in extragalactic objects, and 4. laboratory astrophysics results for spectra investigation. The reviews and research papers, representing new research on the topics presented in this book, are of interest for specialists and PhD students. We hope that the present book will be useful and interesting for scientists interested in the investigation of spectral line shapes and will contribute to the education of young researchers and PhD students.

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