

Introduction to High-Energy Astrophysics

High-energy astrophysics covers cosmic phenomena that occur under the most extreme physical conditions. It explores the most violent events in the Universe: the explosion of stars, matter falling into black holes, and gamma-ray bursts – the most luminous explosions since the Big Bang. Driven by a wealth of new observations, the last decade has seen a large leap forward in our understanding of these phenomena.

Exploring modern topics of high-energy astrophysics, such as supernovae, neutron stars, compact binary systems, gamma-ray bursts, and active galactic nuclei, this textbook is ideal for undergraduate students of high-energy astrophysics. It is a self-contained, up-to-date overview of this exciting field of research. Assuming a familiarity with basic physics, it introduces relevant concepts, such as gas dynamics and radiation processes, in an instructive way. An extended appendix gives an overview of some of the most important high-energy astrophysics instruments, and each chapter ends with exercises.

Stephan Rosswog is Professor of Astrophysics at the School of Engineering and Science, Jacobs University Bremen, Germany. He is a member of the German Physical Society (DPG) and the International Astronomical Union, and is the recipient of a Particle Physics and Astronomy Research Council (PPARC) Advanced Fellowship.

Marcus Brüggen is Professor of Astrophysics at the School of Engineering and Science, Jacobs University Bremen, Germany. He is a member of the International Astronomical Union and Deutsche Astronomische Gesellschaft, and a recipient of the Blackwell Prize from the Royal Astronomical Society.

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