



## Solar and Astrophysical Magnetohydrodynamic Flows

Edited by

Kanaris C. Tsinganos

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# Solar and Astrophysical Magnetohydrodynamic Flows

Modern observations, including recent ones with the Hubble Space Telescope, have revealed that the Universe is replete with plasma outflows from all kinds of objects, ranging from stars in all their variety to galaxies. In this masterly survey of plasma astrophysics, written by leading practitioners, the first 15 articles in Part I deal with the use of the MHD approach in several key problems of solar plasma, such as magnetoconvection and magnetic field generation, sunspots and coronal loops, magnetic nonequilibrium and coronal heating, coronal mass ejections, the acceleration of the solar wind, and stellar winds across the Main Sequence. The following 16 articles of Part II deal with the use of the same MHD approach in several central and puzzling aspects of more distant astrophysical plasmas, such as the dynamics of the interstellar medium, collimated outflows from young stellar objects and accretion disks, molecular outflows and jets associated with enigmatic binaries and symbiotic stars, relativistic flows associated with superluminal microquasars in our own galaxy, astrophysical jets from nearby galaxies, or remote active galactic nuclei and quasars, probably fuelled by supermassive black holes. The emphasis throughout is on the striking underlying similarities in the physics of all these problems. Audience: Indispensable for solar physicists and astrophysics alike. An ideal textbook for graduate students in physics and astrophysics.

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