

**Low-mach-number collisionless shocks in astrophysical and laboratory plasmas**Ryo Yamazaki¹¹ Department of Physics and Mathematics, Aoyama Gakuin University, Japan

Collisionless shocks are ubiquitous in various astrophysical, heliospheric, solar-terrestrial, and laboratory phenomena. Low-Mach-number, magnetized collisionless shocks are important in connecting laboratory and astrophysical plasmas. In the astrophysical environment, they appear in old supernova remnants, forming clusters of galaxies and so on. It should be noted that if the strong (high-Mach number) shocks at young supernova remnants are mediated by accelerated cosmic-ray nuclei, then the subshock has low Mach number. On the other hand, the low-Mach-number shocks will be generated in laboratory in the near future. I will review recent progress in these interesting fields.