The non-thermal Life of Supernova Remnants

Damiano Caprioli*[1]

[1]University of Chicago – 5640 S Ellis Ave Dep. of Astronomy/Astrophysics Chicago, IL 60637, United States

Abstract

I present some new hybrid (kinetic ions-fluid electrons) simulations of ion acceleration at non-relativistic supernova remnant (SNR) shocks, which investigate the re-acceleration of pre-energized "seed" particles, also assessing their role in generating magnetic turbulence, and the injection and acceleration of ions with arbitrary mass-to-charge ratios, crucial for understanding the chemical composition of Galactic cosmic rays. Furthermore, I discuss how non-thermal particles can significantly affect the evolution of typical SNRs and the total amount of momentum that they deposit into the interstellar medium, whcih is crucial to properly model stellar feedback on galaxy formation and evolution.

*Speaker