

第 45 回 RESCEU コロキウム



東京大学大学院理学系研究科 附属ビッグバン宇宙国際研究センター

日 時: 2020年11月26日(木) 10:30 ~ 11:30

場 所: オンライン (Zoom)

講 師: Gilles Ferrand 氏

(Astrophysical Big Bang Laboratory (ABBL), Cluster for Pioneering Research and Interdisciplinary Theoretical and Mathematical Sciences Program (iTHEMS) RIKEN)

From the thermonuclear supernova to the supernova remnant

Abstract

Recent progress in the simulation of supernovae (SNe) has shown the importance of turbulence and asymmetries in successful explosions, which prompts us to revisit the subsequent phase, the supernova remnant (SNR). Can we use the SNR morphology as a probe of the explosion mechanism? Recent work has shown the interest of this approach for a core-collapse SNR like Cas A. Here we argue for the case of a Type Ia SNR like Tycho. Our project is making the link between two communities, the one studying the explosion and the one studying the remnant. We have run 3D simulations of a SNR starting from the output of 3D simulations of the thermonuclear explosion of a Chandrasekhar-mass white dwarf. By analyzing the wavefronts we have quantified the imprint of the explosion on the remnant over time. Assuming a uniform ambient medium, we find that the impact of the SN on the SNR may still be visible after hundreds of years. We will present a first comparative study of different explosions models bearing different levels of asymmetry. We will conclude on prospects for comparisons with X-ray observations of young Galactic SNRs.

興味をお持ちの方の聴講を歓迎致します。