



复旦大学物理系 Colloquium

Time: 14:00, Tuesday, 2021.06.08

Location: Room C108, Jiangwan Physics Building

The Mystery of the Fermi Bubbles in the Milky Way

Fulai Guo

Shanghai Astronomical Observatory

Abstract: The Fermi bubbles are a pair of enormous gamma-ray-emitting bubbles discovered in 2010 by the Fermi gamma-ray space telescope. They are located symmetrically at the north and south of the Galactic plane in the inner Galaxy, representing one of the biggest discoveries in astronomy in recent years. In this talk, I will describe the observational features of the Fermi bubbles, and discuss their gamma-ray emission mechanisms and possible scenarios on their origin. I will focus on our own efforts towards solving this intriguing mystery. Our new jet-shock scenario could explain the X-ray, gamma-ray, and microwave observations of the Fermi bubbles, suggesting that they were produced by a pair of powerful jets emanating from the supermassive black hole at the Galactic center about 5 million years ago. At the end, I will briefly talk about their potential connection to the newly-discovered even-larger eROSITA bubbles in the inner Galaxy in the X-ray band, and the implications of Fermi-bubble-like events on galaxy evolution.



CV: Prof. Fulai Guo is a faculty member in the astrophysics division of Shanghai Astronomical Observatory (SHAO), currently leading a computational astrophysics research group. He received his B.S. degree in astrophysics from University of Science and Technology of China in 2001, and a PhD in Physics from University of California, Santa Barbara in 2008. He then worked consecutively as a postdoctoral researcher at University of California Santa Barbara and at University of California Santa Cruz (UCO/Lick Observatories). In 2012-2015, he was a Zwicky prize fellow at Swiss Federal Institute of Technology Zurich, and in 2015 he joined

SHAO. He is a theorist with a focus on hydrodynamic simulations, and has a wide range of research interests including black hole accretion and feedback, stellar feedback, galaxy evolution, cosmic ray astrophysics, etc.