

USTC Astronomy colloquium Series: 2018 Spring

Outflows in accretion system: physics and application

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In my talk, I will first discuss the physical reason for outflows in the accretion system. We show that, owing to the limited advective cooling, the viscous heating rate will be larger than the total cooling rate when the radiative cooling is inefficient. Thus, no thermal equilibrium can be established under the no-outflow assumption. In other words, outflows ought to occur and take away the part of generated energy by viscous dissipation which cannot be balanced by the cooling. Following this spirit, we study the contribution of outflows to the kilonova emission during the compact binary merger, and find that the outflows can account for the observed kilonovae associated with short gamma-ray bursts, including the recent event GW170817.

厦门大学天文学系教授，现任厦门大学物理科学与技术学院副院长。2001年博士毕业于中国科学技术大学天体物理中心，2006年入选教育部新世纪优秀人才支持计划，2012年获得国家自然科学基金委优秀青年科学基金。主要研究领域是黑洞吸积理论及其在高能天体物理中的应用。