

NAOC SEMINAR

Time: Monday 10:00 AM, April. 12th. 2021 Location: A508 NAO

Timing and spectral properties of Black hole X-ray binary

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Dr. Bei You (游贝) got his PhD in Shanghai Observatory in 2014, under the supervising Prof. Xinwu Cao. The main aspect for his PhD study was the disk-corona accretion theory in BH X-ray binary and AGN, and the measurement of BH spin in these systems. After that, he worked at Nicolaus Copernicus Astronomical Centre (NCAC) as a postdoc between 2014 and 2017 in Poland. Since October 2017, he has been working in Wuhan University. The research interest of Dr. You currently concentrates on the two aspects in BH X-ray binary: (i) Studying the outflow/wind in the hard and soft state; (ii) Modelling the fast variability in the time domain, including the characteristic Quasi-Periodic-Oscillation (QPO) and broad band noise.



Abstract

Black hole X-ray binary (BHXR) spends its lifetime in the quiescent state with the dim radiation. It will be luminous when being triggered to be in the outburst, due to the instability in the accretion flow. Timing and spectral properties of its radiation have revealed the blackbody emission from the cold disk and the Comptonized emission from the hot corona. However, the evolution of the disk-corona flow is still not clear during the outburst. In this talk, I will firstly review the timing (e.g., quasi-periodic-oscillation [QPO] and time-lag) and spectral properties of the X-ray radiation. Then, I will introduce our recent studies on (i) QPO spectral-timing behaviors and (ii) the spectral evolution. These studies will help us better understand the evolution of the accretion process in the outburst of BHXR, in terms of geometry and dynamic.