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国台学术报告 NAOC COLLOQUIUM

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Time: **Wednesday 2:30 PM, Jun.13th** Location: **A601, NAOC**

Powerful jets and winds from stellar-mass objects

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Prof. Roberto Soria obtained his PhD from the Australian National University (Canberra). He then worked as a research fellow at University College London, at the Harvard-Smithsonian Center for Astrophysics (where he first met Prof. Liu Jifeng), and at ICRAR-Curtin University (Perth, Australia). Since 2017, he was a part of Prof Liu's group in Beijing, as a UCAS professor. He investigates X-ray properties of galaxies, with particular focus on black holes in binary systems. He studies: the luminosity, time-variability and spectral properties of accreting black holes; the interplay between matter inflows and fast outflows; the energy

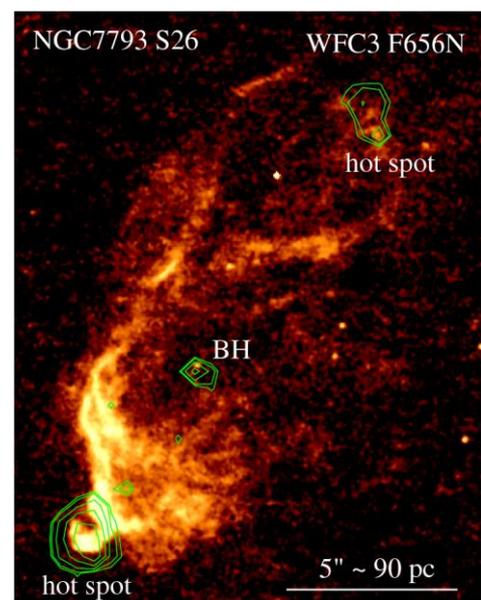
transferred from the outflows to the interstellar medium. He is mostly interested in the association between X-ray, optical and radio properties of accreting compact objects.

Abstract

Jets and winds are often associated with accretion flows, in a large range of systems at all scales: from protostars to white dwarfs, from neutron stars to stellar-mass black holes, from tidal disruption events to quasars. However, there is still no unifying theory that can predict for example: what fraction of accretion power is carried by outflows; whether the jet power comes from energy released in the accretion disk or from the spin-down of the accreting object; what accretion states favor or suppress jet formation.

In my talk, I will focus on a sample of local-universe sources that are thought to be accreting mass at the highest rates (above the classical Eddington limit). Determining whether (or what fraction of) those powerful objects have jets will help our understanding for example of the most powerful quasars in the early universe, and of their effect on the surrounding gas.

I will illustrate examples of ultraluminous X-ray sources where the presence of thick winds is revealed from downscattering, and from lines and edges imprinted on the observed X-ray spectrum. I will then show examples of huge shock-ionized nebulae (size > 100 pc) around some sources: we measure the expansion velocity of the bubble and the emission from diagnostic lines to estimate the mechanical power injected by the accreting compact object. In some cases, such bubbles are also associated with radio synchrotron bubbles. Finally, I will discuss whether the jet and wind power may provide a clue to distinguish between neutron star and black hole accretors.



All are welcome ! Tea and coffee will be served at 2:15 PM.