

国台学术报告 NAOC COLLOQUIUM

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TIME: Wednesday, 3:00 PM, Jan. 11, 2012 **LOCATION: A135 NAOC**

Using stellar mass black holes to understand AGN



Prof. Chris Done (University of Durham)

Chris Done is an Professor at the Durham University, in the Department of Physics. Most of her work to date has focused on black holes, the ultimate triumph of gravity, with spacetime so warped that not even light can escape. She got her PhD in Cambridge on theoretical models of the intense high energy radiation produced by accretion flows. She then moved to the USA on an NRC fellowship, to NASA, Goddard Space Flight Center, and started to work with observational data from accretion flows. An unexpected highlight of this post was working in real time in the control room for an X-ray telescope which flew in the payload bay of the Space Shuttle. She returned to the UK to continue working on both observational data and theoretical models with a PPARC fellowship at Leicester University. Here She concentrated on showing the similarities between accretion flows in stellar mass black holes in binary systems in our galaxy and the accretion flows onto supermassive black holes which power the intense activity seen from Quasars. She moved to Durham University on an advanced PPARC fellowship, and there began to explore how the accretion flows in stellar black hole binaries and neutron stars can lead to tests of key aspects of General Relativity, with clear evidence for the event horizon and last stable orbit in black holes. She became a lecturer in Durham in 2000, and was promoted to Reader and then Professor.

Abstract

I will review the spectral and timing properties of x-ray binaries, especially the behaviour seen as the source makes a transition from the low/hard to high/soft state. The broad band spectral evolution is well modelled by a truncated disc/hot inner flow geometry, where the truncation radius moves progressively towards the last stable orbit during the transition. Here I show that this same geometry can also quantitatively match the power spectral evolution, where fluctuations propagating through the hot flow (stirred up by the MRI) make the broad band continuum power spectra, and Lense-Thirring precession of the hot flow makes the prominent low frequency QPO. I will then take some of the insights on accretion in stellar mass black holes and apply them to see what we can learn about AGN.



All are welcome! Tea, coffee, biscuits will be served at 2:45 p.M.

You are welcome to nominate speakers to Shude Mao (shude.mao@gmail.com), Licai Deng (licai@bao.ac.cn), Xuelei Chen (xuelei@cosmology.bao.ac.cn).