



Contribution ID: 184

Type: Oral Presentation

Accretion and outflow in black hole X-ray binaries

Friday, 11 July 2014 10:00 (20 minutes)

Abstract content (Max 300 words) http://events.saip.org.za/getFile.py/?target=_blank **Formatting & Special chars**

Black hole X-ray binaries (BHXBs) are stellar binary systems comprising of a black hole (BH) and a main sequence star ($M < 2 M_{\text{Sun}}$). They are known to emit X-ray emission through the accretion of mass onto the compact core, as well as radio emission from a collimated jet. My thesis literally splits into two projects. On one hand, we focus on the connection between the X-ray emitting accretion disc and the radio jets of BHXBs, by studying the quasi-simultaneous evolution of the radio fluxes and the X-ray fluxes for 21 BHXBs. This connection, also known as the radio/X-ray correlation has been studied and updated over past years. New observations published in the literature have shown that another population of BHXB exists (dubbed outliers), lying below the standard radio/X-ray correlation. We investigate whether the mass of these BHXBs can play role for the existence of these outliers. On the other hand, we focus on an exotic source, SS433, which has a supercritical accretion disc and displays precessing relativistic jets. Through new observations of the circular polarised fluxes using the Australia Telescope Compact Array (at 2-36 GHz), we attempt to estimate the energy content of the jets and aim to constrain the composition of its jets to be baryonic or leptonic.

Apply to be considered for a student award (Yes / No)?

yes

Level for award (Hons, MSc, PhD)?

MSc

Main supervisor (name and email) and his / her institution

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Would you like to submit a short paper for the Conference Proceedings (Yes / No)?

yes

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Session Classification: Astro

Track Classification: Track D1 - Astrophysics