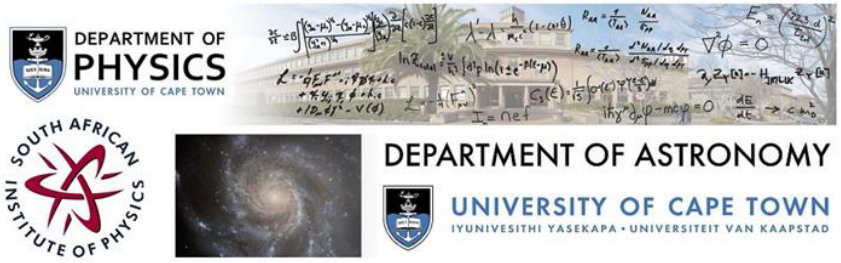

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Probing accretion in magnetic Cataclysmic Variables through fast photometry

Tuesday, 5 July 2016 11:10 (20 minutes)

Abstract content
   (Max 300 words)
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Accreting compact binary star systems are unique astrophysical laboratories. The presence of a mass transferring donor star, spilling material into the magnetosphere of a rotating compact companion, creates a fascinating variety of phenomena. In the case of the Intermediate Polars (IPs), the central white dwarf rotates asynchronously, usually in the presence of a truncated accretion disc. Fast (many frames per second) photometry offers a probe into the dynamics of the luminous material within these systems. Power density spectra of the variability in these systems can, for example, be used to estimate the radius of the inner accretion disc. In discless systems, the stronger magnetic field dictates the gas flow, entirely disrupting the formation of a disc, and often even enforcing synchronous rotation. Almost all the luminous radiation emanates from magnetically confined plasma in the accretion column that forms above the surface of the WD where this high velocity material impacts. A few of these systems display quasi-periodic oscillations (QPOs) in their optical brightness - a phenomenon still poorly understood, but intriguing in its potential to reveal details about the dynamics of plasma under such extreme conditions. In this talk I will present results from a recent observational campaign at SAAO to search for- and characterize QPOs in Polar type Cataclysmic variables, detailing some tantalizing new discoveries, while also discussing the shortfalls of our current theoretical understanding of this phenomenon.

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