



# WEEKLY CALENDAR

16 May 2005

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## General Seminar

3:40PM / Thursday, 19 May 2005 / Room 109, Nicholson Hall

Hosts: Drs. Bradley Schaefer & Robert Hynes

*[Refreshments served at 3:15PM in Room 229, Nicholson Hall]*

## "Last Rites of Binary Star Evolution"

Joe Patterson, PhD  
Columbia University

There has always been a paradox in our understanding of the evolution of cataclysmic variables (CVs). Angular momentum loss should grind the binaries down to  $P_{\text{orb}} \sim 1.3$  hr in 1-3 billion years, and then drive them apart again on a longer timescale. Most CVs should therefore have undergone "period bounce" a long time ago, and be evolving today towards longer period with light secondaries ( $\ll 0.1$  Mo). This is apparently contradicted by observation. Where are these old CVs, the expected survivors of period-bounce, hiding? We have found a way to identify them, primarily by measuring the rates of accretion-disk precession - which yield the secondary-star masses. It turns out that the "observational" result was wrong: these *are* indeed the majority species of CVs, but have been missed because of their faintness and reluctance to erupt. These measures of secondary-star mass also yield a precise mass-radius relation for CVs.

## Publications

"Super-small energy gaps of single-walled carbon nanotube strands." H. Zhu, G.L. Zhao, C. Masarapu, David P. Young, and B. Wei. *Applied Physics Letters* 86, 203107-3 (11 May 2005).

## Announcements and Reminders

There will be a Steering Committee Meeting at 3:40PM, Tuesday, May 17<sup>th</sup>, in Room 201.