

# North Carolina Astronomers' Meeting

## Saturday, 18 September 2004

Auditorium, Percy H. Sears Applied Technologies Center  
Guilford Technical Community College  
Jamestown, NC

*Featured Speaker*

**Paul Butler**

*Department of Terrestrial Magnetism, Carnegie Institution of Washington*

### *Extrasolar Planets*

*None of the roughly one hundred extrasolar planets found to date closely resembles the Solar System. Unlike the Solar System, most extrasolar planets are in eccentric orbits. The giant planets in the Solar System all orbit beyond 5 AU, while the known extrasolar planets (with one exception) all orbit within 4 AU, with several in extraordinarily small orbits with periods of days to weeks.*

*Current state-of-the-art technology can only detect giant planets, with the most massive planets being the easiest to detect. Nonetheless the planet mass function rises toward lower masses down to the limit of detection incompleteness, below a jupiter-mass. There are almost no planets more massive than 5 jupiter-masses though these would be the easiest to detect. The planet bearing stars are significantly enriched in elements heavier than hydrogen and helium relative to both the Sun and nearby stars.*

*NASA, the European Space Agency, NSF, and the European Southern Observatory are all focused on "next generation" planet detection technologies including giant ground-based 30 and 100 meter telescopes capable of directly imaging giant planets, space-based interferometers capable of detecting terrestrial-size planets in earth-like orbits, and space-based telescopes capable of directly imaging earth-like planets and taking their spectra. The first of these next generation instruments should be operating by the end of the decade, with first results coming in around 2015.*

*The goal of our group is to survey all Sun-like stars out to 50 parsecs, a total of about 2,000 stars, using telescopes in California (Lick 3-m), Hawaii (Keck 10-m), Australian (3.9-m AAT), and Chile (6.5-m Magellan). Recent discoveries from our group include several systems of multiple planets, the first transit planet, the first sub-saturn mass companions, as well as two-thirds of all known extrasolar planets.*

*Solar System analogs, Jupiter and Saturn--like planets orbiting beyond 4 AU, have not yet been discovered. These elusive planets will begin emerging from our existing surveys before the end of this decade. By 2010 our surveys will provide a first planetary census of nearby stars, allowing us to estimate the ubiquity of planetary systems and of "Solar System" analogs, and thus put the Solar System in a Galactic perspective for the first time.*

## Meeting Agenda

- 9:00 Open for morning refreshments, setup, milling about...
- 9:20 Welcome, Opening Remarks
- 9:30 Featured Presentation: **Extrasolar Planets**  
**Paul Butler**, Dept. of Terrestrial Magnetism, Carnegie Institution of Washington
- 10:30 Break
- 11:00 **Oral Session I:** 10-minute presentations with 5 minutes for questions and transition to next speaker.
- Matt Bayliss**, UNC-Chapel Hill  
*The Extinguished Afterglow of GRB 030329 – Modeling Exotic Dust Grain Populations in Another Galaxy*
- John Mattox**, Fayetteville State University  
*Utilization of the 1.3-m RCT Telescope for Studies of Blazars and Gamma-Ray Bursts*
- Katie Hicks**, Guilford College  
*BVRI Photometry of Post-AGB Stars*
- Michael Castelaz**, Pisgah Astronomical Research Institute  
*HST Observations of the Central Star of Proplyd N171-340*
- 12-2 Lunch – on your own – a list of nearby eating establishments will be available.  
Note: a brief tour of the Cline Observatory will be available at 12 if there is interest.
- 2:00 **Special Session: PROMPT**
- Dan Reichart**, UNC-Chapel Hill  
*PROMPT: A Shared North Carolina Resource*
- John Bartelme, UNC-Chapel Hill  
*A Discussion on PROMPT's Software Control and Architecture*
- 2:40 Break & Demonstration of PROMPT Software
- 3:15 **Oral Session II:** 10-minute presentations with 5 minutes for questions and transition to next speaker.
- Mel Blake**, Pisgah Astronomical Research Institute  
*Contact Binaries in the Old Open Clusters NGC 6791, M67, NGC752, Praesepe and Coma*
- Dan Caton**, Appalachian State University  
*Getting to the Bottom of it: The Time of Minimum Light Eclipsing Binary Photometry Program at ASU's Dark Sky Observatory*
- Jonathan Keohane**, Hampden-Sydney College  
*Is W49B the Remnant of a Gamma Ray Burst?*
- Andrew Foster**, UNC-Chapel Hill  
*Educational Research in Radio Astronomy: An Annual Program at NRAO, Green Bank*
- Richard Gray**, Appalachian State University  
*The Nearby Stars (NStars) Program*
- 4:30 Closing Remarks