

# STELLAR WINDS IN INTERACTION

## FRIDAY – WELCOME

18:00 Welcome reception

## SATURDAY – STELLAR PHYSICS I (Chair: Thomas Eversberg)

9:00 Welcome – José Ribeiro

9:15 Hot colliding winds and the 2008/2009 campaign on WR140

*Tony Moffat (Université de Montréal)*

10:00 The WR140 periastron passage 2009 - First results from MONS and other optical sources

*Remi Fahed (Université de Montréal)*

### Coffee break

11:15 WR140 in the Infrared

*Peredur Williams (Royal Observatory Edinburgh)*

12:00 X-ray RXTE observations of WR 140

*Mike Corcoran & Kenji Hamaguchi (NASA/GSFC)*

### 13:00 Lunch

## SATURDAY – STELLAR PHYSICS II (Chair: José Ribeiro)

15:00 WR140 and WR25: What they say about WC and WN colliding winds

*Andy Pollock (ESAC / Madrid)*

### Coffee break

16:30 WR 140 results from radio observations

*Sean Dougherty (Institute for Space Imaging Science Radio Astronomy Calgary) - presented by Julian Pittard (University of Leeds)*

17:15 New models and theory

*Julian Pittard (University of Leeds)*

## SUNDAY – PROAM I (Chair: Tony Moffat)

10:00 Why amateurs invest their time

*Filipe Dias (Portugal)*

10:45 Spectroscopic madness - A golden age for amateurs

*Thomas Eversberg (STScI Germany)*

### Coffee break

12:00 The Eps Aur eclipse Pro-Am campaign

*Robin Leadbeater (Three Hills Observatory England)*

### 13:00 Lunch

## SUNDAY – PROAM II (Chair: Perry Williams)

15:00 Recent ProAm Campains - Be stars, CoRoT and others

*José Ribeiro (Portugal)*

### Coffee break

16:00 Scientific collaborations in astronomy between amateurs and professionals

*Johan Knapen (IAC Tenerife)*

16:45 Round-Table-Discussion – How to go forward to future ProAm campaigns professionals

*All*

# Abstracts

## **Hot colliding winds and the 2008/2009 campaign on WR140**

Tony Moffat (Université de Montréal, Canada)

**Abstract:** WR140 is often considered to be the archetype of luminous, hot colliding-wind binaries, with strong cyclic high-energy effects and dust formation. The problem is that this system is quite extreme, with a long period (7.94 years) and high eccentricity ( $e = 0.88$ ). Most of the action that needs to be examined occurs during the relatively short four-month interval of periastron passage, which in the most recent 2009 January passage occurred during the northern winter months when this summer Cygnus star was least favourably placed in the sky. Various multiwavelength campaigns were organized at different sites. Of particular interest to this workshop was the MONS optical spectroscopic effort, involving both amateur and professional astronomers at the MONS site. I will describe WR140 in terms of the general phenomenon of hot colliding winds and leave the campaign details to other speakers.

## **WR140 and WR25 : What they say about WC and WN colliding winds**

Andy Pollock (European Space Agency XMM-Newton Science Operations Centre, Madrid)

**Abstract:** Among the Wolf-Rayet stars, the two X-ray brightest long-period binary systems are WR140 (WC7+O4-5) with  $P = 2899\text{d}$  and WR25 (WN6ha+O) with  $P = 208\text{d}$ . Both stars have been extensively observed at different orbital phases; are nearly monotonically variable with phase; and show eclipses by the Wolf-Rayet component. High-resolution spectra of WR140 also reveal the projected dynamics of the X-ray emitting gas at a few orbital phases as well as reflecting the underlying collisionless-shock physics. Complementary low and high resolution data are considered for any general lessons they might have to offer concerning the phenomenon of colliding winds.

## **Spectroscopic madness - A golden age for amateurs**

Thomas Eversberg (Schnörringen Telescope Science Institute, Germany)

**Abstract:** Today, stellar astronomers are running into a technological cul-de-sac. Instrumentation becomes larger and larger but observation time acquisition is a serious problem for intermediate or even long-term observations (Gregor Rauw on a recent meeting

about stellar spectroscopy). On the other hand, small scale observatories are often decommissioned due to reduced funding. The golden age of astronomy, though, has influence on amateur astronomy, as well. Today, non-professional enthusiasts run telescope equipment which has been state-of-the-art technology some forty years ago. In addition, spectroscopic applications become available in this domain by using off-the-shelf instruments as well as self-designed spectrographs for telescopes of up to 1m aperture, not to speak about modern CCD technology. I will give an overview about amateur work on massive stars (e.g., long-term Be star monitoring and intermediate-term campaigns) as well as the available technology. Needs for campaign management and necessities for potential pro-am collaborations are highlighted.

### **The Eps Aur eclipse Pro-Am campaign**

Robin Leadbeater (Three Hills Observatory England)

**Abstract:** Every 27.1 years epsilon Aurigae is eclipsed for almost 2 years by a mysterious dark object and every eclipse a new generation of astronomers armed with the latest technology attempt to solve the puzzle. This time round amateurs equipped with high resolution spectrographs are taking part.

In this talk I will describe the current best fit description of the system and show how the large number of amateur photometric and spectroscopic observations made during this eclipse are already revealing new information about this unusual object.

### **Recent ProAm Campaigns - Be Stars, CoRoT and Others**

José Ribeiro (Observatório Atalaia, Portugal)

**Abstract:** My talk aims to share my personal collaborative experience with two groups not represented in the workshop: the Astronomical Institute of the Czech Republic, and the French group.

Assuming that ProAm collaborations may be fruitful, there are then a lot of work to be done in order to put this "machine" in movement. I'll present here a synopsis of what I consider the paradigm of a ProAm collaboration, the BeSS ( Be Star Spectra ) database and the associated tool ArasBeam. This project, took seven years to implement, and is running perfectly for three years. Its conception involved the Paris-Meudon observatory, the French CNRS, and a bunch of amateurs.

## **Scientific collaborations in astronomy between amateurs and professionals**

Johan Knapen (IAC Tenerife, Spain)

As our successful Mons campaign to observe WR140 has shown, there is a strong interest among both amateur and professional astronomers to collaborate on specific scientific questions. I will highlight some recent examples of successful collaborations, and will outline in which areas of astronomy future collaborations can make a difference. I will also give my views on amateur access to the best professional observing sites, with special emphasis on the Teide observatory on Tenerife.

### **Round table discussion**

This round table is intended to discuss future PROAM collaborations and many questions may be raised, such as:

- What good reasons exist for the PROAM collaborations?
- In what cases may it be fruitful?
- How and by whom may it be initiated?
- What may be the interest of an Observatory in allowing the use of a telescope, for an extended period of time, taking into account that it costs money and resources?
- At the present time, in what areas is this collaboration needed and welcome?
- And in the near future?
- May it be a good use for telescopes and other equipments not in regular use by the observatories?
- What skills must the amateurs have to be eligible for these collaborations?
- What equipment is necessary at a private observatory?
- What are the necessary parameters (e.g., S/N, spectral resolution, calibration stability)?