

# Monash e-Research Centre



Thursday, 28 October 2010

**e-Research Exemplars and Discussion Forum / eCoffee**

## **e-Research Challenges in 'Astrophysics'**

**Presented by Dr. Daniel Price**

**(Monash Research Fellow in Astrophysics, School of Mathematical Sciences)**

**Time: 10am-11am** (coffee from 9.45am)

**Location: Room 135, Bldg 26, Clayton Campus**

**Enquiries:** Debra.Truin@adm.monash.edu.au or Gaby.Bright@versi.edu.au

You are invited to an informal discussion forum - open to all interested researchers and staff:

The formation of stars is one of the most fundamental processes in the universe without which galaxies, planets and indeed, ourselves would not exist. However our theoretical understanding of star formation is relatively poor, primarily because of the difficulty in modelling the physical process which involves gravity, highly turbulent gas dynamics at supersonic velocities, magnetic fields, radiation, molecular and dust chemistry, to name just a few. Star formation also involves a truly enormous range in length and time scales which makes simulating the process difficult - even with the fastest computers.

One of the key aspects of Dr. Price's work at Monash is to understand the role of magnetic fields in the star formation process, using simulations that form whole star clusters rather than just isolated stars - which gives a much deeper, statistical, picture of star formation. Much of this involves numerical algorithms for simulating the relevant physics over the wide range of length and time scales involved in star formation (using the Smoothed Particle Hydrodynamics method). These methods are applicable to other areas of astronomy, and also to many earth-bound problems for which SPH is increasingly being used.

### **Biography:**

Dr. Daniel Price is a Monash Research Fellow in Astrophysics at Monash University. Prior to this Dr. Price was a Royal Society University Research Fellow in the Astrophysics group of the School of Physics at the University of Exeter, and before this he held a Postdoctoral Research fellowship at Exeter. ( <http://users.monash.edu.au/~dprice/research/index.html> )

### **e-Research Exemplars and Discussion Forum / eCoffee:**

These monthly presentations bring together the e-Research support network at Monash University, along with all interested researchers and staff, to discuss the opportunities and challenges presented by the application of e-Research technologies and strategies for the particular research domain of the discussion. The presenter first introduces the audience to the topic / case study and then the session is opened up for questions. The monthly forum is co-hosted by the Monash e-Research Centre and VerSI.