

Special Session 7 - Summary and Concluding remarks

Silvia H. P. Alencar¹
and Jane Gregorio-Hetem²

¹Departamento de Física, ICEx, UFMG, Belo Horizonte, MG 31270-901, Brazil
email: silvia@fisica.ufmg.br

²Universidade de São Paulo, IAG/USP, São Paulo, SP, 05508-090, Brazil

This was a very pleasant and interesting meeting on star formation. The debate run on freely and contributions were of a very high level, including the oral contributions of four exceptional graduate students.

We discussed star formation diagnostics over the full frequency range, going from radio to gamma rays. In the Special Session 7, high energy phenomena were often cited by researchers working on other frequencies. Most people became recently aware of the importance of high energy phenomena to star formation and disk evolution. The interesting issue is that it happened in recent years greatly due to Spitzer, an infrared telescope, after the detection of Neon lines in circumstellar disks of sun-like stars. It was said that, in what seemed to be Spitzer noise, raised a forest of water (so much sought) and Neon (not sought at all) lines in the spectra of the circumstellar disks of low mass stars.

From a number of talks we saw that brown dwarfs are just a scaled version of T Tauri stars. They have disks and accretion goes on with the same characteristic variability. They have jets, that are still quite hard to image, even in the VLT. They also form in binaries and, although eclipsing binaries seem to be hard to find, new observations of astrometric binaries are producing ways to test evolutionary models in the very low mass regime. Brown dwarf atmospheres remain a challenge that nevertheless evolves rapidly. We now need spectra of binaries with well determined masses to fully test the atmosphere models, which are beautiful, though quite complicated. It took a decade work to get to the actual state-of-the-art, but it looks to us like a good investment of time, given the results.

The first results of the CoRoT satellite on the star-forming region NGC 2264 were presented in the meeting, which includes the most detailed light curves up to now of young low mass stars. The rotation signatures are easy to measure and show substantial variations from ground-based results of the same region. The accretion signatures are quite impressive too, showing that, for a reasonable number of stars, we are able to probe the dynamic star-disk interaction.

Stellar ages in the pre-main sequence became though a lot more uncertain. It was suggested that they are not properly measured, which caused a lot of discussion. It was also shown that we may need to know the entire accretion history of an object to find out its age from an HR diagram in the Pre-Main-Sequence. This could explain the large dispersion observed in the HR diagram among young stars from the same star forming region, but it would also make precise age determination an almost impossible task in early stellar evolution.

The debate goes on among X-wind and disk-wind defenders, with much more detailed and complex models, including multipolar magnetic fields and MHD simulations on each side.

Finally, we saw that planet formation goes on in multiple stellar systems. Planets can form in circumstellar disks of wide binaries, as well as in circumbinary disks around tight companions. Tight binaries, however may have a significant influence on inner disk evolution.

From stars to planets and from gamma rays to radio wavelengths, we discussed the formation and early evolution of star-disk systems. We would like to thank all the participants for making this a very special session.

Silvia Alencar and Jane Gregorio-Hetem

Part V. List of Poster papers

- The Evolution of Disks, Protostars and the Young Cluster IRAS 20050+2730
Nancy R Adams
- Optical depth effects in the X-ray spectra of CTTSs
Costanza Argiroffi
- Energetic processes in young accreting stars with outbursts
Marc Audard
- Searching for Ionized Gas Tracers in Spitzer IRS Spectra of Young Stars in Taurus
Carla Baldwin-Saavedra
- Multi-Epoch Survey of 10 μm Silicate Variability in DG Tau and XZ Tau
Jeffrey S. Bary
- Modeling the X-ray emission from the nearest jets: HH 154 and DG Tau
Rosaria Bonito
- The Young Stellar Population in Orion OB1
Cesar Briceño
- The High Energy (UV/X-ray) Radiation Fields of the Young Stars GM Aurigae and HD135344B and the Likely Effects on Their Transitional Disks
Alexander Brown
- An X-Ray Census of the Young Stars of Serpens
Joanna M Brown
- Rotation and Magnetic Fields in Fully Convective Stars: What simulations can tell us
Matthew Browning
- Day-night side cooling of the strongly irradiated planet
Jan Budaj
- Study of transitory disks between the protoplanetary and debris phases
Carolina Chavero
- Searching for DIBs in circumstellar environments of Herbig Ae/Be stars
Cristiane Costa
- The physical and chemical environment of a star-forming bright-rimmed cloud
Alison Craigon
- Tracing Outflows from Massive Young Stellar Objects through Masers and Mid-Infrared Emission
James M. De Buizer
- The properties of pre-main sequence stars in the Magellanic Clouds
Guido De Marchi
- Resonant structures in Planetesimal Disk from system HD98800
Rita C. Domingos
- The disk and envelope structure of Class 0 protostars in Serpens
Melissa Lanae Enoch
- Dynamical study of mass accretion and outflow in the classical T Tauri star V354 Mon
Nathalia Fonseca
- Numerical results for the formation of the four giant planets of the Solar System
Andrea Fortier
- Identification of pre-stellar objects in the Rosette molecular cloud
Diana R. G. Gama
- Observing Gap Formation in the Dust Layer of a Protoplanetary Disk
Jean-François Gonzalez

Discovery of co-moving young stars in Cepheus

Patrick Guillout

Study and determination of physics and geometrical parameters of FU Orionis stars

Luciana Veronica Gramajo

Optical spectroscopy of young stars detected by XMM in Canis Major

Jane Gregorio-Hetem

Like arrows pointing to a target: cometary globules in Cygnus OB2

Marcelo M. Guimaráes

Methane Imaging Survey for Planetary Mass Objects in Rho Ophiuchi

Karl Haisch Jr.

On the X-ray origin of Herbig stars

Murad Hamidouche

UV Excess Measures of Accretion onto Low-mass Stars and Brown Dwarfs

Gregory J. Herczeg

The use of genetic algorithms and spectral synthesis in the calculation of Abundances and Metallicities of T Tauri stars

Annibal Hetem

Star Formation in Musca Dark Cloud: I. IRAS12322-7023

Gabriel Rodrigues Hickel

Water Ice Grains on the Surface of the Circumstellar Disk Around HD 142527

Mitsuhiko Honda

Magnetic properties of Herbig Ae/Be stars

Svetlana Hubrig

The magnetic field of the Herbig Be binary/FU Orionis object Z CMa during the current outburst

Svetlana Hubrig

New Moving Groups members in the ROSAT All-Sky – Tycho sample

Alexis Klutsch

The rotational inertia of tidally and rotationally distorted low-mass pre-main sequence stars

Natalia R. Landin

Variations in the 10-micron Silicate Feature in Actively Accreting T Tauri Stars

Jarron M. Leisenring

A Planetary Companion Orbiting to the Intermediate-Mass G Giant HD 173416

Yujuan Liu

Gas and dust in the Inner Region of Protoplanetary Disks

Leticia Luis

Numerical simulations of planet formation at the borders of the dead zone

Wladimir Lyra

Grain growth in protoplanetary disks

Sarah Tahli Maddison

Early-type pre- and main-sequence objects in the Eagle-Nebula and Carina star-forming regions

Christophe Martayan

Young planetary systems and the Corot satellite

Thiago Matheus

Angular Momentum Loss Via Stellar Winds

Sean P. Matt

Snapshots of debris disk evolution with high-resolution thermal imaging

Margaret Marie Moerchen

- A compilation of stellar kinematic groups: stellar streams, moving groups, and associations
David Montes
- The heating of accretion columns of T Tauri stars
Alana Paixão
- Near Infrared polarimetry of a sample of YSOs
Antonio Pereyra
- Protoplanetary disks of TTauri binaries in Orion
Monika G. Petr-Gotzens
- Spin Evolution of Very Young Stars: Effect of Magnetic Field Opening During the Accretion Phase
Giovanni Pinzon
- New M Dwarf Debris Disks Discovered with the Spitzer Space Telescope
Peter Plavchan
- Characterizing the accretion rate of the Classical T Tauri star LkHalpα 264
Oscar Restrepo
- Spectroscopy of Herbig Ae/Be stars
Lara Rodrigues
- First step to discover planets
Gisela A. Romero
- Modeling of accretion shock on CTTSs
Giuseppe G. Sacco
- Limits from HST on Brown Dwarfs and Planetary-Mass Objects through Microlensing
Kailash Chandra Sahu
- Captured at millimeter wavelengths: periodic millimeter flaring from the classical T Tauri star DQ Tau
Demerese Salter
- Disks in early B-stars
Goran Sandell
- Understanding Brown Dwarfs in the infrared
Ulf Seemann
- Physical characteristics of two very young massive star forming regions
Elise Servajean
- Correlations between X-ray emission and accretion tracers in a COUP subsample of T Tauri Stars
Bruno Silva
- The connection between X-ray and Infrared
Bruno Silva
- Characterization of Young Stellar Clusters
Thais dos Santos Silva
- PARSEC: First results proper motions and magnitudes
Richard Smart
- Methods for Extinction Determination in Young Stellar Clusters
Beatriz Fernandes Soares
- Probing the mass accretion process in the neighbourhood of SN 1987A
Loredana Spezzi
- An optical imaging survey of Serpens
Loredana Spezzi
- BLAST observations of the Carina Nebula NGC 3372
Sarah Ann Stickler

The 2008 Accretion Outburst of the Prototype EXOR EX Lupi

Guy S. Stringfellow

Determination of the mass and temperature of the exoplanet candidate HD33636b using VLT+AMBER

Ramarao Tata

SACY: Nurseries and Kindergartens in the solar neighborhood

Carlos Alberto O. Torres

The effect of mass accretion on early stellar evolution

Andrea Urban

The effects of the stellar wind on the magnetic field configuration of weak T Tauri stars

Aline A. Vidotto

RV Cr1, an intriguing PMS triple system

Luiz Paulo R. Vaz

Confirmation of the nature of Herbig Ae/Be candidates

Rodrigo Vieira

A Spectroscopic Study of Young Stellar Objects in the Serpens Cloud Core and NGC 1333

Elaine M. Winston

Brown dwarf formation by fragmentation of protostellar discs

A. Whitworth

Condensation in Brown Dwarf Atmospheres

Soeren Witte

X-Ray and Infrared Emission from Young Stellar Objects near LkHalpha 101

Scott J. Wolk

New tree-based gravity solver for octal tree AMR codes

Richard Wunsch