

RoPACS

Rocky Planets Around Cool Stars



A Marie Curie Initial Training Network

Past

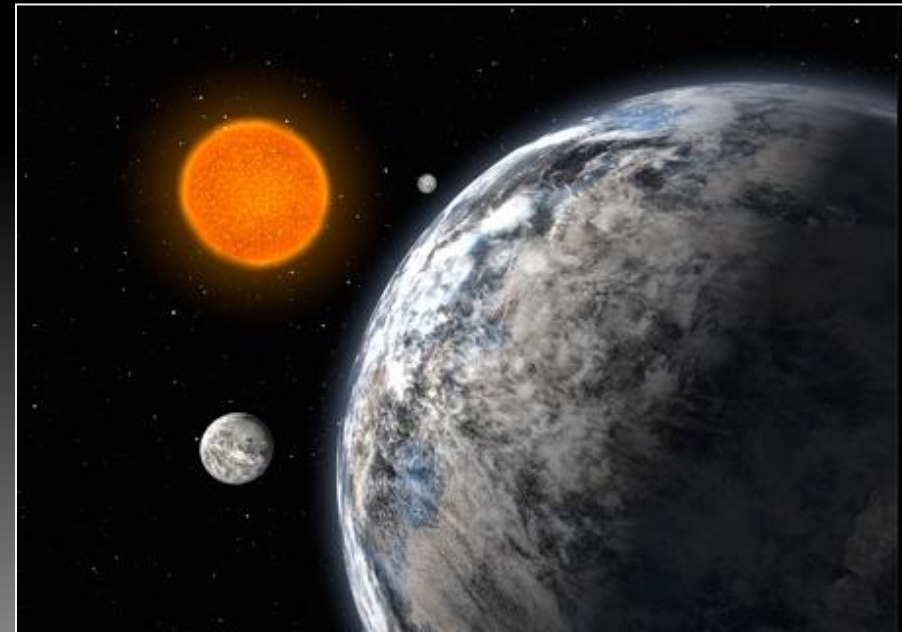
Present

Future

Annual Network Meeting

November 2009
Tenerife

Joana Gomes



About me

Santarém – Portugal

Good food, good wine, sun and lots of beaches!

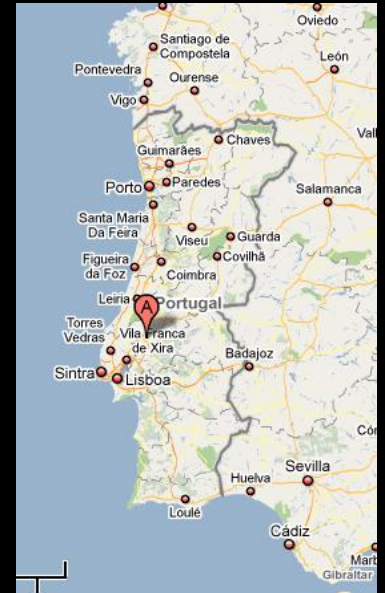
Past



Present



Future



And this is what made me
choose Astrophysics...



• 2004 - 2007

Physics degree in the Faculty of Sciences,
University of Lisbon



Past

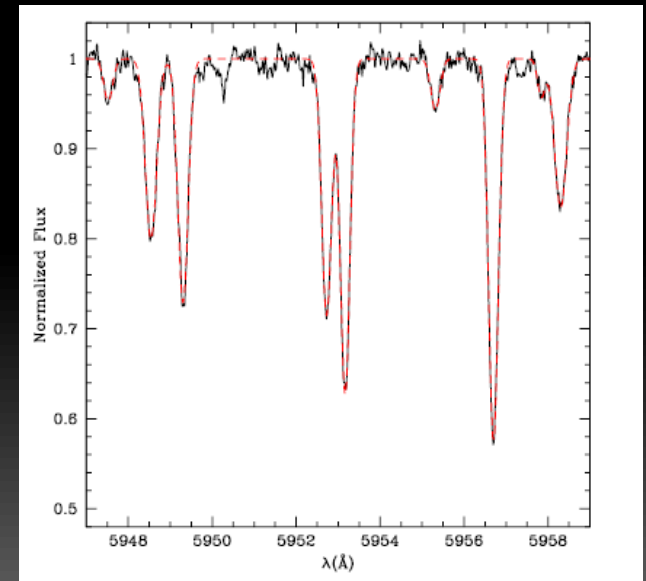
The first contact with a real astronomer!

Present

Work with Dr Nuno Santos on stellar spectra.

Future

The main purpose of this work was to study the chemical abundances in nearby star-forming regions. Stellar parameters and metallicities were derived using the spectra of weak line T-Tauri stars.



UVES spectrum



Interesting conclusions

Past

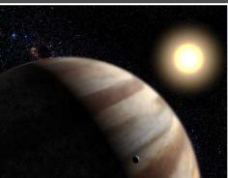
- Abundance ratios in these SFRs are typical of those found in solar neighbourhood thin disk stars of similar metallicity;

Present

- The chemical abundances in the nearby ISM are quite uniform and not strongly above solar;

Future

- The rarity of metal-rich nearby star-forming regions may limit the goals of projects like the SPHERE planet finder if the metallicity-giant planet connection is still present for systems with long orbital periods.



•2007 – 2008

Masters on Astronomy / Astrophysics

Past

The first year of the Master I spent most of my time here...

Present

Future



... and here, at the Centre for Astronomy and Astrophysics of the University of Lisbon.



From nearby star-formation sites, to the outer Galaxy

I worked with Dr João Lin Yun, doing the *JHKs* photometry of a young stellar cluster in the far outer Galaxy. We investigated the properties of this cluster and of its parent cloud.

Past

Present

Future

- Young embedded cluster with low and intermediate-mass stars;
- Ks-band luminosity function and star-formation efficiency similar to those seen in nearby star-formation sites;
- The distant outer Galaxy continues to be active in the production of new and rich stellar clusters.



Young cluster towards
IRAS 07527-3446.



•2008 – 2009

The second year of the Master

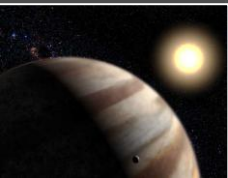
My thesis was about a young embedded stellar cluster towards an IRAS source. The cluster is located in the Vela Molecular Ridge at a distance of 700 pc.

Past

Present

Future

- Near-infrared images were reduced and then used to obtain the aperture photometry;
- Cluster population includes pre-main sequence stars with infrared excess emission;
- BLAST data were used to obtain the dust mass , gas mass and star formation efficiency.



Back to the present...

Past

The *JHKs* photometry of the IRS22 cluster was then used by Massi to test the circumstellar disk lifetimes in young embedded clusters associated with the cloud D of the Vela Molecular Ridge.

Present

The paper was submitted just this week and will (hopefully) be published soon.

Future



Young cluster IRS22



PhD... a new adventure begins!

Official Early Stage Researcher at the University of Hertfordshire – 1 of October
2009

Past

Searching for new age constraining companions to exoplanet
host stars

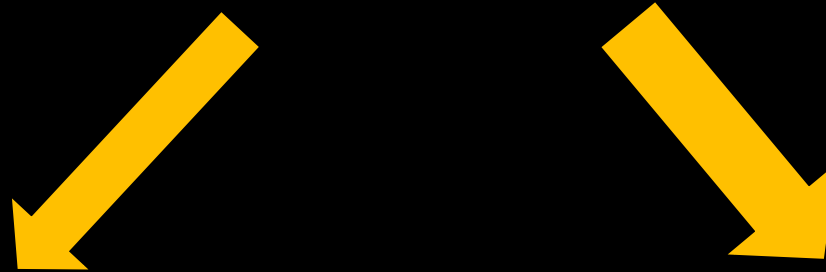
Present

Future

- the evaporation of hot Jupiter planets ;
- effects of gravitational scattering over time;
- stability and evolution of exoplanets in inclined orbits;
- effects of giant planets on smaller planets in the same system.



This project



Past

Present

Future

Study age constraining

- We can use the white dwarfs cooling ages to derive the age of the system;
- This will allow to study in more detail the evolution of planetary systems

Search for wide companions

- Binary systems with Brown Dwarf and White Dwarf companions;
- There is still a lot to do regarding the study of wide binaries with planet host stars.



So far...

Past

I have been comparing and crossmatching data from catalogs such as SDSS to observations from HARPS, Hipparcos or Coralie.

Present

The main goal is to search for common proper motion binaries with White Dwarf companions. So far I have found 25 candidates, but a lot more needs to be done!

Future

I will then start to look for T dwarf stars on the 2MASS database and try to find if these have planet host stars as companions.



And back to the future...

- Search for more binaries with WD and BD components;
- Spectroscopic studies of these binaries;
- Radial velocity studies on the BD companions to the planet host stars;

Past

Present

Future

Thank you!

