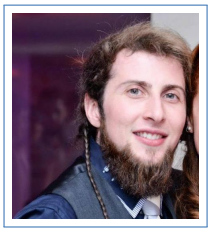

Rafael Dias

Curriculum Vitae

Education

2013–2015 **Masters of Physics**, *Universidade Federal do Rio Grande do Sul - UFRGS*.

2013 **Bachelor of Physics**, *Universidade Federal do Rio Grande do Sul - UFRGS*.

University UFRGS is the 10th highest ranked university in Latin America by QS top universities (`http://www.topuniversities.com/`). The physics/astronomy institute has the highest score in the evaluation of Brazilian education Ministry. The astronomy department has 11 teachers, including collaborators, post-docs and graduate students, it amounts to a 40 people research group. `http://www.ufrgs.br/astronomia`

Masters Thesis

Title ***Spectroscopy and photometry of open clusters – Understanding the Galaxy chemical evolution***

Supervisors Professor Charles Bonatto & Professor Alan Alves-Brito

Description The formation and evolution of the Galaxy is still poorly understood. As chemical abundance ratios are proportional to crucial variables such as the star formation rate and the timescale of chemical enrichment, a key observable to constrain the Galactic evolution model is the variation of the chemical abundances across the Galactic disk. Many studies were done in this area to date, but there is systematic abundance differences among them due to inhomogeneities in adopted methodologies. We aim to homogeneously analyze, photometric and spectroscopically, a sample of 60 open clusters to trace a reliable chemical profile of the Galactic disk. For this purpose we developed a python routine for automatically acquire stellar atmospheric parameters and chemical abundances based on 2013 version of MOOG (Sneden 1973) and Kurucz models (Castelli et al. 1997).

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Courses

Sept. 16 - 20, 2013 **5th INPE advanced course:** An overview of cosmology in the era of large telescopes: Theory, observation and simulations. The lectures were focused on the following topics: 1) Cosmic Microwave Background, with emphasis on the new results from Planck 2) the large scale structure as unveiled by the recently completed Sloan Digital Sky Survey and 3) cosmological simulations, which became an essential part of the research in this field.
`http://www.das.inpe.br/school/AdvancedCourse/`

Aug. 18-21, 2014 **ALMA and the Brazilian community workshop:** The goal of the workshop was to explore how the current science activity within the Brazilian community can benefit from the new ALMA observatory and millimeter/submm observations in general.
`http://www.on.br/coaa2/alma2014/index.html`

Sept. 02 - 12, 2014 **JPL-Caltech Virtual Summer School in Big Data Analytics:** Computational skills and methodology needed for the analysis and interpretation of ever more massive and complex data sets are essential for the scientific and technological workforce in the 21st century. This virtual summer school addressed this need.
`http://bigdata.astro.caltech.edu/Home.html`

Out. 18 - 19, 2014 **VIII workshop in neuroscience:** the workshop covered the themes memory, consciousness, neurotoxicity, neurodegeneracy and graduate programs in neuroscience. Bento Gonçalves, RS - Brasil. (UFRGS)
`http://www.ufrgs.br/ppgneuro/`

Out. 28 - 29, 2014 **III symposium of the UFRGS psychiatry league: controversial issue on neuroscience.** In the symposium the following themes was discussed: neuroimaging, drug regulation, suiciding and medicalization.
`http://www.hcpa.ufrgs.br/component/option,com_events/task,view_detail/agid,877/year,2014/month,10/day,28/Itemid,1101/`

Experience

Vocational

2010–2011 **Intern**, Magnetism laboratory, UFRGS.
Developing experiments in nanotechnology related with giant magnetoresistance.

Details:
- Making nanotips by electrolysis;
- Using sputtering to make multilayer nanofilms;
- Building experimental apparatus.

e

2011–2013 **Intern**, Astrophysics laboratory, UFRGS.
Studying open Clusters

Details:
- Measuring star formation rate in solar neighborhood;
- SOAR photometry in clusters within the bridge between Magellanic clouds;
- Creating a pipeline to perform photometry in VVV (VISTA Variables in The Via Lactea) survey.

Miscellaneous

2010–2013 **Teaching**.

- Private tutor:
  - Spanish;
  - Physics;
  - Math.
- Euroschool – Informatics;
- Wizard – Spanish.

Awards

2012 Remarkable work in astronomy section at scientific initiation meeting, at Porto Alegre, RS - Brazil (UFRGS).

Computer skills

Intermediate C, FORTRAN, SCILAB, Microsoft office, OpenOffice, Indesign, Computer Hardware and Support;

Advanced PYTHON, IRAF, VIM, DS9, ALADIN, SHELL SCRIPT, LINUX, MOOG, LaTeX.

Communication Skills

2010 – 2013 Oral and poster presentation at the annual scientific initiation meeting, at Porto Alegre, RS - Brazil (UFRGS); `http://www.ufrgs.br/propesq1/`

2013 Poster at Latin American Regional IAU Meeting, at Florianopolis, RS - Brazil;
Poster:
`https://dl.dropboxusercontent.com/u/8175336/larim_2013_rafael_dias.pdf`

2014 Oral Presentation at ALMA and the Brazilian Community Workshop, at Rio de Janeiro, RJ - Brazil (ON).
Presentation:
`https://dl.dropboxusercontent.com/u/8175336/ap_alma.pdf`

Languages

Portuguese	**Native language**	
Spanish	**Advanced**	*Conversationally fluent*
English	**Advanced**	*Conversationally fluent*
German	**Basic**	*Basic words and phrases only*

Reference Persons

Charles Bonatto **charles.bonatto@ufrgs.br**.
Refereed as: Bonatto, C.

Alan Alves Brito **alan.brito@ufrgs.br**.
Refereed as: Alves-Brito, A.

Publication List

Dias, R. A. G.; Bonatto, C. 2014 — **A psf-fitting pipeline for VVV-ESO: The star cluster Pismis 24**.

Bica et al. (submitted) — **Bridge over troubled gas: clusters and associations under the SMC and LMC tidal stresses**.

Research interests

General topics — **Star formation/evolution, stellar clusters, stellar atmosphere, galactic chemical evolution** , .

Techniques — **Photometry (isochrone fitting) and spectroscopy (Curve of growth analysis)**.

Comments — **I've started my research performing infrared photometry in star clusters. Now I combine photometry and spectroscopy to study this objects. I'm a programming enthusiastic, I've wrote a pipeline for psf-photometry in VVV tiles and a routine to automatically calculate chemical abundances from equivalent widths. It would be fascinating if as next step I could work with machine learning, data mining or high complexity codes** .

Available to Phd at August 2015