Carlos Eduardo Barbosa
| Curriculum Vitae

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Personal Information

Date of Birth: August 25th, 1984

Nationality: Brazilian

Marital Status: Married, 1 son

Education

2012 - 2016 PhD in Astronomy, University of São Paulo, IAG

Thesis Title: *Kinematics and Stellar Populations in the Nearby Universe* (Funded by FAPESP)

Supervisor: Dr. Cláudia Mendes de Oliveira

Brief Synopsis of Research: The environment has an important role in the morphological transformations of galaxies. Using spectroscopic observations, we have studied the physical mechanisms that led to morphological transformations at the environments of groups and clusters. By the study of the kinematics and stellar populations of the cD galaxy NGC 3311 at the core of the Hydra I cluster, we have shown that the formation of its diffuse halo happened recently, with the merging events related to the formation of the BCG itself being responsible to unbound stars that ended up in the cD halo, with a contribution of satellite galaxies in groups. During my PhD I have also organized and led seminars in our research group, and assisted undergraduates in disciplines.

2009 - 2011 MSc in Astronomy, University of São Paulo, IAG

Dissertation Title: *Photometry, Decomposition and Correlations for Nearby Spiral Galaxies from the GHASP Survey* (Funded by CNPq and FAPESP)

Supervisor: Dr. Cláudia Mendes de Oliveira

Brief Synopsis of Research: Spiral galaxies obey several scaling relations relating their sizes, luminosities and kinematics. In this study, we have deployed a detailed analysis of the photometry of 173 galaxies in the GHASP survey, one of the most precise and detailed surveys on the kinematics in the local universe, in order to obtain a precise characterization of such relations, including sub-components such as bulges and disks.

2005 - 2009 BSc in Physics, University of São Paulo, Institute of Physics

Average grade: 8.0/10

Undergraduate Research in Theoretical Biophysics: *The role of the anesthetics on neural signal*

propagation and the cellular membrane thermomecanic properties (Funded by CNPq)

Supervisor: Dr. Carla Goldman

2002 - 2003 Technical Education in Refrigeration, SENAI Oscar Rodrigues Alves

Design, installation and maintenance of refrigeration and air conditioning facilities, from residential to industrial systems.

2000 - 2001 Professional Education in Machining, SENAI Mariano Ferraz

Theory and practice of the operation of lathes, milling machines, vertical drills and surface grinding machines. Technical drawing and AutoCAD training for design of mechanical systems. CNC programming for lathe and milling machine.

Employment

2017 - present Postdoctoral Researcher, University of São Paulo, IAG

2006 - 2008 Administrative Intern, Library of the Biomedical Sciences Institute, University of São Paulo

I have performed a range of activities including the installation and administration of computers for the users, digitalization of numerous rare books and old slides and other assigned tasks. I have built a positive relationship with other members of the staff.

2000 - 2005 CNC Lathe Operator, York International

I joined York International as an apprentice in Machining in parallel to my studies at the SENAI technical school, developing skills in diverse machine tools and in metrology. In the last year, I was dedicated to the programming and the operation of CNC lathes of different kinds. This job required abilities such as responsibility, ethics, constant focus and team abilities, which I have been using successfully in my professional career ever since.

Languages

Portuguese: Native language

English: Fluent

French: Basic

Computer skills

Operating Systems: Unix (Debian, Ubuntu, Mint) and Windows (XP, Vista, 8)

Applications: Microsoft Office Word, Excel and Power-Point and open-source equivalents (LibreOffice, OpenOffice).

Programming: Python, IDL, FORTRAN, C

Astronomical Packages: IRAF, PyRAF, diverse reduction packages (EsoReflex, dohydra)

Other: LaTeX, Git, GitHub, Overleaf, HTML

Research Interests

Stellar populations: Using modern facilities to study ages and chemical abundances of galaxies in the local universe.

Bayesian inference in astronomy: Development of new methods for data analysis and modeling using advanced statistical tools.

Dynamics of galaxies: Determination of kinematics of galaxies and dynamical modeling.

References

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Publications

C. E. Barbosa, M. Arnaboldi, L. Coccato, M. Hilker, C. Mendes de Oliveira, and T. Richtler. The Hydra I cluster core. I. Stellar populations in the cD galaxy NGC 3311. *A&A*, 589:A139, 2016. doi: 10.1051/0004-6361/201628137. URL `http://dx.doi.org/10.1051/0004-6361/201628137`.

C. E. Barbosa, C. Mendes de Oliveira, P. Amram, F. Ferrari, D. Russeil, B. Epinat, V. Perret, C. Adami, and M. Marcelin. GHASP: an Hα kinematic survey of spiral galaxies - X. Surface photometry, decompositions and the Tully-Fisher relation in the R_c band. *MNRAS*, 453: 2965–2981, November 2015a. doi: 10.1093/mnras/stv1685.

C. E. Barbosa, M. Arnaboldi, M. Hilker, L. Coccato, T. Richtler, and C. Mendes de Oliveira. A 3D view of the Hydra I cluster core- II. Stellar populations. In B. L. Ziegler, F. Combes, H. Dannerbauer, and M. Verdugo, editors, *IAU Symposium*, volume 309 of *IAU Symposium*, pages 223–224, February 2015b. doi: 10.1017/S1743921314009727.

M. Hilker, C. E. Barbosa, T. Richtler, L. Coccato, M. Arnaboldi, and C. Mendes de Oliveira. A 3D view of the Hydra I galaxy cluster core - I. Kinematic substructures. In B. L. Ziegler, F. Combes, H. Dannerbauer, and M. Verdugo, editors, *IAU Symposium*, volume 309 of *IAU Symposium*, pages 221–222, February 2015. doi: 10.1017/S1743921314009715.