

Rosa Katherine Vieira Villarreal

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PROFILE

Astronomer, specialist in Astrometry research and also with extended experience in science outreach. Venezuela Person of Contact and National Outreach Contact for the International Astronomical Union (IAU). Member of the editorial board at Cogent Physics Journal. Member of the Sociedad Venezolana de Física. Certified radio/tv broadcaster (License #46.636).

CURRENT POSITIONS

Assistant researcher, Centro de Investigaciones de Astronomía (CIDA)

Mérida, Venezuela 2012 - Present

Scientific research in Astrometry, especially proper motion studies of various stellar populations within the Milky Way and nearby galaxies (e.g. Magellanic Clouds) using large astrometric catalogues, aimed to understand the kinematics of the different galactic components and the Local Group. Teaching and advising thesis, at undergraduate and graduate level for Mathematics and Physics students. Outreach activities at CIDA, including public talks and press/radio/tv interviews. CIDA is Venezuela's national government institution dedicated to Astronomy research and outreach.

Invited lecturer, Postgrado en Física Fundamental, Universidad de los Andes (PFF-ULA)

Mérida, Venezuela 2012 - Present

Teaching classes and advising theses at this Physics graduate program, when interested students require my expertise in Astrometry or related fields.

Member of editorial board, Cogent Physics, Taylor and Francis Publishing

Oxfordshire OX14 4RN, UK 2015 - Present

Editorial contributions for Cogent Physics on current topics and events in Astrophysics, aimed to Cogent Physics readers and contributors.

PAST POSITIONS

Postdoctoral researcher, Centro de Investigaciones de Astronomía (CIDA)

Mérida, Venezuela 2009 - 2012

EDUCATION

PhD in Astronomy, 2009. Yale University, New Haven, CT, USA.

Masters in Fundamental Physics, 2002. Universidad de los Andes, Mérida, Venezuela .

Bachelor of Science in Mathematics, 1998. Universidad Centroccidental Lisandro Alvarado, Barquisimeto, Venezuela.

SKILLS AND EXPERIENCE

Scientific: Use of Statistics in the making and analysis of large catalogues of proper motion, to find trends in data caused by the presence of different stellar populations with a common kinematics, flawed/false/bad data or systematic errors. Processing of astronomical images to optimise astrometric information. Detailed astrometric reductions to detect, model and correct for distortions in order to improve accuracy of astrometric catalogues. Measurement of positions and/or proper motions, relative or absolute, small or large fields, including overlapping solutions, using photographic plates and CCD observations. Total 44 articles as listed by NASA ADS (full list at the end of this document) of which 22 are refereed (3 as first author), h-index=11.

Academic: Lecturer on Astrometry, Stellar Clusters, Milky Way and Cosmology at CIDA's Programa Universitario de Astronomía summer 8-week intensive class since 2010. Lecturer on Astrometry at undergraduate level (ULA and other Venezuelan universities) and graduate level for PFF-ULA. Member of CIDA's Academic Comitee since 2012. Member of thesis committees for several undergraduates and graduates (Master and PhD) Astronomy theses since 2010. Advisor on several Astronomy short research projects (1 - 3 months long) for undergraduate and graduate students (e.g. *Programming Astrometry routines in Fortran*, *Common proper motion binaries in Hipparcos (primary) and SPM4 (secondary)*, *Statistical analysis of a sample of WIRCam Deep Survey quasars*). Advisor in 4 undergraduate thesis (*Individual uncertainties of astrometric catalogues SPM4, XPM and UCAC4 using Wielen's method*, *Proper Motion of Open Cluster Trumpler 14*, *Known wide binaries in SPM4: An evaluation to look for wide binaries*, *Quasars Luminosity Function: A Poisson Point Process approach*) and 1 Master thesis (*Wide Binaries search in SPM4 by common proper motion*).

Outreach: Extensive experience and natural abilities to give talks, conferences and interviews on astrophysics topics, providing a scientifically accurate information in an engaging language accesible to the general public. I have been interviewed many times, live/taped, on radio/TV to comment about astronomical news. I am a certified radio/tv broadcaster, license #46,636 in Venezuela. Some of my public talks are: *TV Astronomy* (Planetario de Bogotá, Colombia 2016), *Cosmic Catastrophes*, *Women astronomers*, *Human messages to space*, *The Moon and life on Earth*, *Why there are no green stars*, *Jewels of the universe*, *Astronomy and the development of the human being* (CIDA Un Instante en el Universo Public Talks Series, from 2011 to 2017), *Mesuring the stars: From Hipparcus to HIPPARCOS*, *Cosmic Catastrophes* (Leitner Family Planetarium, Yale University, USA, 2007 and 2009).

Administration and Organization: I have been part of Local Organizing Committees (LOC) and Scientific Organizing Committees (SOC) for national and internacional astronomy meetings in Venezuela and Latin America, including SOC member of the VI and VII Astronomía Dinámica en

Latinoamerica (ADeLA) in Santiago de Chile, Chile and Bogotá, Colombia in 2014 and 2016, respectively. Currently member of the SOC for the ADeLA VIII meeting that will take place at Tarija, Bolivia in 2018 and member of the LARIM 2019 SOC representing Venezuela.

Editing and refereeing of scientific publications: Referee for Astrophysical Journal in 2012, 2013 and 2018. Editor of the proceedings of the VI and VII ADeLA meetings in 2015 and 2017.

Computer: Programming in Fortran 77, use of IRAF for astronomical image processing, expert use of TOPCAT, basic use of Python, use of Linux and Windows operating systems.

Languages: Fluent in Spanish (mother language) and English. Some fluency in spoken Portuguese.

OTHER ACTIVITIES

- Radio broadcaster at program *Una Casa Portuguesa*, Somos 92.7 fm, Mérida, Venezuela, since June 2017.

ONLINE LINKS OF SOME OF MY ACTIVITIES

- Personal web page at CIDA: <http://www.cida.gob.ve/~kvieira/Inicio.html>
- VI ADeLA Meeting: <https://www.youtube.com/watch?v=OyPZTzW3Ek&t=12s>
- CIDA Public Talk *La astronomía y el desarrollo del ser humano*: <https://www.youtube.com/watch?v=KENcaokw1hk&t=14s>
- Editorial contributions for Cogent Physics: *The 20 March 2015 Solar Eclipse in Europe*, *Finding Earths*, *The GAIA era has started*.
- Radio show *Una Casa Portuguesa* (every Saturday from 2 pm to 4 pm)

PERSONAL AND CONTACT INFORMATION

Full name: Rosa Katherine Vieira Villarreal

Gender: Female

Age: 43 yrs old

Civil status: Single

Place and date of birth: Barquisimeto, Venezuela. 14-11-1974

Nationality: Venezuelan and Portuguese

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FULL LIST OF PUBLICATIONS (h-index=11)

- Zhang L., et al. (2018) RMxAC 50: 68. *Abundances and Kinematics of OB stars in the Leading Arm of the Magellanic System.*
- Dávila E., **Vieira K.** & Rosales K (2018) RMxAC 50: 66. *Search for Open Binaries in the Southern Celestial Hemisphere using SPM4.*
- Rodríguez M. & **Vieira K.** (2018) RMxAC 50: 54. *Proper motion of open cluster Trumpler 14.*
- **Vieira K.**, García A. & Sabogal B. (2018) RMxAC 50: 5. *Proper motion separation of Be stars in the Magellanic Clouds and the Milky Way.*
- Fernández-Trincado J. et al. (2017) MNRAS 469: 4175. *Atypical Mg-poor Milky Way field stars with globular cluster second-generation-like chemical patterns.*
- **Vieira, K.** et al. (2017) MNRAS 469: 4175. *Proper motion separation of Be stars in the Magellanic Clouds and the Milky Way.*
- Zhang L. et al. (2017) RMxAC 49: 168. *Chemical composition of young stars in the Leading Arm of the Magellanic System.*
- Moni Bidin C. et al. (2017) RMxAC 49: 108. *Young stars in the LMC Periphery.*
- Moni Bidin C. et al. (2017) MNRAS 466: 3077. *Young stars in the Large Magellanic Cloud Periphery.*
- Zhang L. et al. (2017) ApJ 835: 285. *Chemical composition of young stars in the Leading Arm of the Magellanic System.*
- Fernández-Trincado J. et al. (2016) ApJ 833: 132. *Discovery of a metal-poor field giant with a globular cluster second-generation abundance pattern.*
- Fernández-Trincado J., Robin A., Reylé C., **Vieira K.** et al. (2016) MNRAS 461: 1404. *Close encounters involving RAVE stars beyond 47 Tucanae tidal radius.*
- Fernández-Trincado J. G., Robin A. C., **Vieira, K.** et al. (2015) A&A 583: 76.. *RAVE stars tidally stripped or ejected from the Omega Centauri globular cluster.*
- Casetti-Dinescu D. et al. (2015) RMxAC 46: 99. *Star Formation in the Leading Arm of the Magellanic System.*
- Dávila E. & **Vieira K.** (2015) RMxAC 46: 79. *Uncertainties of astrometric catalogues SPM4, XPM and UCAC4 in the Magellanic Clouds using the Wielen method.*
- Moni Bidin C. et al. (2015) ASPC 491: 272. *OB stars in the Leading Arm of the Magellanic System.*
- **Vieira K.** et al. (2014) RMxAC 43: 51. *Proper motion of the Magellanic Clouds using SPM*
- Casetti-Dinescu D. et al. (2014) ApJ 784: 37. *Recent star formation on the Leading Arm of the Magellanic Stream.*
- Casetti-Dinescu Dana, **Vieira, K.** et al. (2012) ApJ 753: 123. *Constraint on the Magellanic Clouds' interaction from the Distribution of OB stars and the kinematics of giants.*
- **Vieira K.** et al. (2011) RMxAC 40: 106. *Proper motion study of the Magellanic Clouds using SPM material.*

- Girard T., van Altena W., Zacharias N., **Vieira K.**, et al. (2011) AJ 142: 15. *The Southern Proper Motion Program. The SPM4 Catalog.*
- Platais I., Girard T., **Vieira K.**, et al. (2011) MNRAS 413: 1024. *A deep proper motion survey of nearby open cluster Blanco 1.*
- **Vieira K.** et al. (2010) AJ 140: 1439. *Proper motion study of the Magellanic Clouds using SPM material.* (PhD thesis).
- **Vieira K.** et al. (2009) RMxAC 35: 123. *Proper Motions in the Galactic Bulge's: Plaut's Window.*
- Widemann T. et al. (2009) Icar 199: 458. *Titania's radius and an upper limit on its atmosphere from the September 8, 2001 stellar occultation.*
- van Altena W. et al. (2009) BAAA 52: 291. *SPM4: The Yale/San Juan Southern Proper Motion survey: 100 million absolute proper motions.*
- **Vieira K.** et al. (2008) IAUS 245: 351. *Proper Motions in the Galactic Bulge's: Plaut's Window.*
- **Vieira K.** et al. (2007) AJ 134: 1432. *Proper Motions in the Galactic Bulge's: Plaut's Window.*
- **Vieira K.** et al. (2006) RMxAC 26: 185. *The Galactic Bulge velocity dispersion as measured by proper motions in Plaut's Window.*
- **Vieira K.** et al. (2006) RMxAC 26: 209. *Astrometry with OPTIC at WIYN.*
- **Vieira K.** et al. (2006) RMxAC 25: 99. *Astrometry with OPTIC at WIYN.*
- **Vieira K.** et al. (2006) RMxAC 25: 35. *The Galactic Bulge velocity dispersion as measured by proper motions in Plaut's Window.*
- Abad C. & **Vieira K.** (2006) RMxAC 25: 7. *Systematic motions in the Galactic Plane.*
- Abad C. and **Vieira K.** (2005) A&A 442: 745. *Systematic motions in the Galactic plane found in Hipparcos catalogue using Herschel's Method.*
- **Vieira K.** et al. (2005) ASPC 338: 130. *Astrometry with OPTIC at WIYN.*
- Vivas et al. (2004) AJ 127: 1158. *The QUEST RR Lyrae Survey I. The First Catalog*
- Abad C., **Vieira K.** et al. (2003). *An extension of Herschel's method for dense and extensive catalogs. Application to the determination of solar motion.* A&A 397: 345. (Master thesis)
- Abad C. & **Vieira K.** (2002) RMxAC 14: 112. *Solar Motion using all Hipparcos.*
- Vivas et al. (2001) ApJ 554: 33. *The QUEST RR Lyrae Survey: Confirmation of the Clump at 50 kiloparsecs and other overdensities in the Outer Halo.*
- Ferrin I. et al. (2001) ApJ 548: 243. *Discovery of the bright Trans-Neptunian Object 2000 EB₁₇₃.*
- Schaefer B. et al. (1999) ApJ 524: 103. *Discovery of the optical transient of GRB 990308.*
- Abad C., **Vieira K.** and Zambrano A. (1998). *Reduction of the Astrometric Catalogue, zone of San Fernando.* A&AS 132: 275.