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Research Interests

Active galactic nuclei, physics of black holes and accretion disks, relativistic jets, gamma-ray astrophysics, gamma-ray bursts, ultra-high-energy cosmic rays, Galactic Center, astrostatistics

Education

2/2005 – 6/2009 Universidade Federal do Rio Grande do Sul (UFRGS), Ph.D. in Astrophysics
4/2003 – 1/2005 UFRGS, M.S. in Astrophysics
3/1999 – 2/2003 UFRGS, B.S. in Physics

Research Experience

9/2013 – present Postdoctoral Research Scientist, NASA Goddard Space Flight Center/CRESST/University of Maryland Baltimore County
8/2010 – 8/2013 NASA Postdoctoral Program Fellow, NASA GSFC
7/2009 – 7/2010 Postdoctoral researcher, UFRGS
2/2005 – 6/2009 Graduate Research Assistant (Ph.D.), UFRGS. Thesis advisor: Prof. Thaisa Storchi Bergmann. *Thesis title: Accretion onto supermassive black holes in present-day galaxies*
8/2007 – 7/2008 Visiting Research Scholar, Penn State. Advisor: Prof. Mike Eracleous
3/2005 – 7/2005 Visiting Research Scholar (Alfa Fellow), Durham University. Advisor: Prof. Richard Bower
4/2003 – 1/2005 Graduate Research Assistant (M.S.), UFRGS. Advisor: Prof. Thaisa Storchi Bergmann. *Dissertation: The physical nature of the spectral energy distribution and emission lines of the LINER NGC 1097*
3/2000 – 2/2003 Undergraduate Research Assistant, UFRGS. Advisor: Prof. Thaisa Storchi Bergmann

Professional Activities

Referee for Astrophysical Journal (ApJ), ApJ Letters, Monthly Notices of the Royal Astronomical Society (MNRAS), MNRAS Letters, Journal of Cosmology and Astroparticle Physics (JCAP), Classical and Quantum Gravity (CQG), International Journal of Modern Physics D (IJMPD), Acta Polytechnica

Review panel for NASA (*Fermi*)

External proposal referee for *William Herschel Telescope* (Instituto de Astrofísica de Canarias)

Member of American Astronomical Society (AAS), Sociedade Astronômica Brasileira (SAB – Brazilian Astronomical Society), AAS High Energy Astrophysics Division (HEAD)

Fermi LAT Collaboration member

Member of SOC for Torus Workshop 2012

Member of LOC for: IAU Symposium 222: The interplay among stars, black holes and the interstellar medium, AstroProgramming Lecture Series at UFRGS (2010)

Official translator of *NASA – Space Weather Action Center project*, a partnership between the Brazilian government (Ministério da Educação MEC) and NASA

Telescope/Grant Proposals

2010-2013	PI, NASA Postdoctoral Fellowship grant, US\$264k
2012	Co-I, APEX Telescope, “Filling the hole: sub-mm observations of LINERs for a more complete SED”, 4.5 h
2012	Co-I, NSF proposal, “Quasars Two Ways: Spectral Energy Distributions and Reverberation Mapping”, US\$300k
2011	PI, <i>Fermi</i> Guest Investigator proposal, “Probing the gamma-rays from low-luminosity AGNs with <i>Fermi</i> ”, US\$90k
2007, 2008	PI, 2 <i>Gemini</i> North Observatory proposals, “The broad double-peaked H α profiles of the nuclei of low-luminosity AGN”, 12 h (long-slit spectroscopy)

Computational Experience

General science software:	Expert: Python/IPython, IDL, Mathematica, Maple, Gnuplot, Supermongo Proficient in: R, Matlab
Astrophysics software:	Expert: Cloudy Proficient in: Gadget, Iraf, Fermi Science Tools
Operating systems:	Expert: all distributions of Linux, Mac OS X, Windows Proficient in: SUN, Solaris
Programming languages:	Expert: Python, Fortran 77/90/95, Perl, Awk, shell scripting Proficient in: C, C++, Java
Revision control:	Git
Parallel/high performance computing:	Shared memory/Multithreading with OpenMP, Python multiprocessing and IPython.parallel

Training

4/2012	Plasma Physics and Particle Acceleration (Mini-Symposium). Joint Space-Science Institute, University of Maryland
2/2012	Accretion Astrophysics (Mini-Symposium). Joint Space-Science Institute, University of Maryland
8/2008	Theory and Observations of Accretion Disks (27h). Universidade de São Paulo (USP), Brazil
6/2008	Summer School in Statistics for Astronomers IV (36h). Pennsylvania State University, USA
4/2008	Writing persuasive research proposals, with Michael Alley (workshop, 2h). Penn State University
3/2008	Rethinking the design of presentation slides, with Michael Alley (workshop, 2h). Penn State University
9/2007	AGN at the highest angular resolution: theory and observations (60h). Nicolaus Copernicus University, Poland
4/2006	Formation of Structure in the Universe (40h). Universidade de São Paulo, Brazil
9/2005	INPE Advanced Course - A Roadmap for Cosmology (30h). Instituto Nacional de Pesquisas Espaciais (INPE), Brazil

Awards

08/2010 – present NASA Postdoctoral Program (NPP) Fellowship (GSFC)
 11/2009 – 07/2010 CNPq Postdoctoral Research Scholarship (UFRGS)
 2009 NASA Postdoctoral Fellowship (offer delayed to 2010 due to J1 visa clearance)
 8/2007 – 7/2008 Capes Graduate Research Scholarship (Penn State)
 2/2005 – 2/2009 CNPq Graduate Research Scholarship (UFRGS)
 3/2005 – 7/2005 Alfa/LENAC (Latin-American European Network for Astrophysics and Cosmology)
 Graduate Research Scholarship (Durham)
 4/2003 – 1/2005 Capes Graduate Research Scholarship (UFRGS)
 3/2000 – 2/2003 CNPq Undergraduate Research Scholarship (UFRGS)

Press

My research has been featured in two NASA press releases and several news websites. This includes BBC News, USA Today, Space.com, ars technica, National Geographic News, Fox News, Folha de São Paulo, Zero Hora and Revista Pesquisa FAPESP. For more information, please see the *press section* of my web page.

Outreach

Since 2008 Various interviews for radio shows, newspapers, magazines and popular science websites including Space.com, National Geographic, Folha de São Paulo, Zero Hora, Rádio CBN and Revista Pesquisa FAPESP.
 Since 2008 Participated in several science outreach events: AstroFest (Penn State), Portas Abertas (UFRGS), USA Science and Engineering Festival (staff at NASA booth)
 Since 2007 Various public lectures for children and adults
 2010 Taught advanced astrophysics concepts to high-school science teachers

Languages

Fluent in portuguese and english. Good understanding of spanish. Basic reading hability of german.

References

Dr. Neil Gehrels, NASA Goddard Space Flight Center, +1 (301) 286 6546, neil.gehrels@nasa.gov
 Dr. Rita M. Sambruna, NASA Headquarters, rita.m.sambruna@nasa.gov
 Prof. Markos Georganopoulos, University of Maryland Baltimore County, +1 (410) 455 8149, georgano@umbc.edu
 Prof. Thaisa Storchi Bergmann, Universidade Federal do Rio Grande do Sul, +55 (51) 3308 6443, thaisa@ufrgs.br
 Dr. Chris Shrader, NASA Goddard Space Flight Center, +1 (301) 286 8424, Chris.R.Shrader@nasa.gov
 Prof. Michael Eracleous, Penn State University, +1 (814) 863 6041, mce@astro.psu.edu

Additional references available upon request

Publications in Refereed Journals

I published papers as first author in *Science*, *Astrophysical Journal* (ApJ) and *Monthly Notices of the Royal Astronomical Society* (MNRAS). My papers are listed below in chronological order of publication.

1. **NEMMEN, R. S.**, et al. The Kinetic Efficiencies of Low Power Radio Galaxies. In prep. for MNRAS Letters
2. **NEMMEN, R. S.**, STORCHI-BERGMANN, T., ERACLEOUS, M. Spectral Models for Low-luminosity Active Galactic Nuclei in LINERs: The Role of Advection-dominated Accretion and Jets. MNRAS, *in press*
3. MASON, R. E., ..., **NEMMEN, R. S.**, ALONSO-HERRERO, A. The Role of the Accretion Disk, Dust, and Jets in the IR Emission of Low-luminosity AGN. 2013, ApJ, 777, 164
4. *Fermi* LAT Collaboration. Dark Matter Constraints from Observations of 25 Milky Way Satellite Galaxies with the Fermi Large Area Telescope. Phys. Rev. D, submitted (arXiv:1310.0828)
5. *Fermi* LAT Collaboration. The First Fermi-LAT Catalog of Sources Above 10 GeV. 2013, ApJS, 209, 34
6. PREECE, R., ..., **NEMMEN, R. S.**, et al. The First Pulse of the Extremely Bright GRB 130427A: A Test Lab for Synchrotron Shocks. 2013, Science Express
7. *Fermi* LAT Collaboration. Fermi-LAT Observations of the Gamma-ray Burst GRB 130427A. 2013, Science Express
8. *Fermi* LAT Collaboration. Search for Gamma-ray Spectral Lines with the Fermi Large Area Telescope and Dark Matter Implications. 2013, Phys. Rev. D, 88, 8
9. *Fermi* LAT Collaboration. The First Fermi LAT Gamma-ray Burst Catalog. 2013, ApJS, 209, 11
10. *Fermi* LAT Collaboration. The Second Fermi Large Area Telescope Catalog of Gamma-Ray Pulsars. 2013, ApJS, 208, 17
11. *Fermi* LAT Collaboration. Associating Long-term γ -Ray Variability with the Superorbital Period of LS I +61°303. 2013, ApJ, 773, L35
12. *Fermi* LAT Collaboration. Constraints on the Galactic Population of TEV Pulsar Wind Nebulae Using Fermi Large Area Telescope Observations. 2013, ApJ, 773, 77
13. *Fermi* LAT Collaboration. The Fermi All-sky Variability Analysis: A List of Flaring Gamma-Ray Sources and the Search for Transients in Our Galaxy. 2013, ApJ, 771, 57
14. *Fermi* LAT Collaboration. Determination of the Point-Spread Function for the Fermi Large Area Telescope from On-orbit Data and Limits on Pair Halos. 2013, ApJ, 765, 54
15. *Fermi* LAT Collaboration. Detection of the Characteristic Pion-Decay Signature in Supernova Remnants. 2013, Science, 339, 807
16. TOMBESI, F., ..., **NEMMEN, R. S.**, et al. Unification Of X-Ray Winds In Seyfert Galaxies: From Ultra-Fast Outflows To Warm Absorbers. 2013, MNRAS, 430, 1102
17. **NEMMEN, R. S.**, GEORGANOPOULOS, M., GUIRIEC, S., MEYER, E. T., GEHRELS, N., SAMBRUNA, R. A Universal Scaling for the Energetics of Relativistic Jets from Black Hole Systems. 2012, Science, 338, 1445
18. *Fermi* LAT Collaboration. A Gamma-Ray Binary Millisecond Pulsar in a Blind Search with Fermi LAT. 2012, Science, 338, 1314
19. *Fermi* LAT Collaboration. The Fermi Large Area Telescope On Orbit: Event classification, Instrument Response Functions, and Calibration. 2012, ApJ, 203, 4
20. *Fermi* LAT Collaboration. Fermi Large Area Telescope Study of Cosmic Rays and the Interstellar Medium in nearby Molecular Clouds. 2012, ApJ, 755, 22
21. SCHIMOIA, J. S., STORCHI-BERGMANN, T., **NEMMEN, R. S.**, et al. Short timescale variations of

- the H α double-peaked profile of the nucleus of NGC 1097. 2012, ApJ, 748, 145
22. SHANG, Z., ..., **NEMMEN, R. S.**, et al. The Next Generation Atlas of Quasar Spectral Energy Distributions from Radio to X-rays. 2011, ApJS, 196, 2
 23. **NEMMEN, R. S.**, BROTHERTON, M. Quasar bolometric corrections: Theoretical considerations. 2010, MNRAS, 408, 1598
 24. **NEMMEN, R. S.**, BONATTO, C., STORCHI-BERGMANN, T. A correlation between the highest energy cosmic rays and nearby active galactic nuclei detected by Fermi. 2010, ApJ, 722, 281
 25. OKAMOTO, T., **NEMMEN, R. S.**, BOWER, R. G. The impact of radio feedback from active galactic nuclei in cosmological simulations: Formation of disk galaxies. 2008, MNRAS, 385, 161
 26. **NEMMEN, R. S.**, BOWER, R. G., BABUL, A., STORCHI-BERGMANN, T. Models for jet power in elliptical galaxies: A case for rapidly spinning black holes. 2007, MNRAS, 377, 1652
 27. **NEMMEN, R. S.**, STORCHI-BERGMANN, T., YUAN, F., ERACLEOUS, M., TERASHIMA, Y., WILSON, A. Radiatively Inefficient Accretion Flow in the Nucleus of NGC 1097. 2006, ApJ, 643, 652
 28. STORCHI-BERGMANN, T., **NEMMEN, R. S.**, et al. Evidence for a Starburst within 9 pc of the Active Nucleus of NGC 1097. 2005, ApJ, 624, L13
 29. STORCHI-BERGMANN, T., **NEMMEN, R. S.**, et al. Evolution of the Nuclear Accretion Disk Emission in NGC 1097: Getting Closer to the Black Hole. 2003, ApJ, 598, 956

Conference Proceedings

30. **NEMMEN, R. S.** Black Hole Jet Unification in the Fermi Era. In: 2012 Fermi Symposium Proceedings (arXiv:1303.2278)
31. **NEMMEN, R. S.** Probing The Central Engines of Low-Luminosity Active Galactic Nuclei. In: Proceedings of the Torus Workshop 2012 held at the University of Texas at San Antonio, 2013. C. Packham, R. Mason, and A. Alonso-Herrero (eds.) (arXiv:1301.7719)
32. **NEMMEN, R. S.**, STORCHI-BERGMANN, T., ERACLEOUS, M., YUAN, F. Advection-dominated accretion, jets and the spectral energy distribution of LINERs. In: Co-evolution of central black holes and galaxies, 2010, Rio de Janeiro, Brasil. Proceedings of the International Astronomical Union Symposium and Colloquia. Cambridge: Cambridge University Press. v.267 (arXiv:1001.3174)
33. **NEMMEN, R. S.**, STORCHI-BERGMANN, T., BOWER, R. G., BABUL, A. Models of jet power in elliptical galaxies: support for rapidly rotating black holes In: The central engine of active galactic nuclei, 2006, Xi'an. The central engine of active galactic nuclei. San Francisco: Astronomical Society of the Pacific, 2006
34. **NEMMEN, R. S.**, STORCHI-BERGMANN, T., YUAN, F., ERACLEOUS, M., TERASHIMA, Y., WILSON, A. Radiatively inefficient accretion flow in the nucleus of NGC 1097 In: 11th Latin-American Regional IAU Meeting, 2005, Púcon. Revista Mexicana de Astronomía y Astrofísica (Serie de Conferencias). v.26. p.204
35. **NEMMEN, R. S.**, STORCHI-BERGMANN, T., ERACLEOUS, M., TERASHIMA, Y., WILSON, A. The ionizing source of the nucleus of NGC 1097 In: The Interplay among Black Holes, Stars and ISM in Galactic Nuclei, 2004, Gramado, RS, Brasil. Proceedings of the International Astronomical Union Symposium and Colloquia. Cambridge: Cambridge University Press. v.222
36. STORCHI-BERGMANN, T., **NEMMEN, R. S.**, ERACLEOUS, M. Evolution of the accretion disk in the nucleus of NGC 1097 In: Active Galactic Nuclei: from Central Engine to Host Galaxy, 2002, Paris. Proceedings of the conference Active Galactic Nuclei: from Central Engine to Host Galaxy
37. STORCHI-BERGMANN, T., **NEMMEN, R. S.**, ERACLEOUS, M. Feeding the active nucleus of NGC 1097 In: Star Formation through Time, 2002, Proceedings of the Conference Star Formation through Time

Teaching Experience

Teaching assistant for the following undergraduate courses at UFRGS:

2010	i. Exploring the Universe (intro. to cosmology; black holes and active galaxies), ii. Cosmology and relativity (special relativity; Friedmann equation; large scale structure)
2009	Exploring the Universe (black holes and AGNs)
2008	Fundamentals of astronomy (black holes and quasars)
2006	i. Fundamentals of astronomy (standard cosmological model), ii. Introduction to astronomy and astrophysics (lab. tutor), iii. Cosmology and relativity (special relativity, large-scale structure formation)
2004	Plasma physics

Selected Talks

11/2013	Invited colloquium. Institute for Theory and Computation, Harvard
6/2013	Invited colloquium. Instituto Astronômico e Geofísico, Universidade de São Paulo, São Paulo
6/2013	Invited seminar. Universidade de São Paulo, São Carlos
6/2013	Invited colloquium. Universidade Federal do Rio Grande do Sul, Porto Alegre
5/2013	Panel discussion member. Revealing Radiative Processes near Black Holes Workshop, Princeton
4/2013	Contributed talk. Gamma Ray Burst Symposium, Nashville
2/2013	Invited talk. UMD
1/2013	Invited talk. Naval Research Lab
1/2013	Contributed talk. AAS meeting, Long Beach CA
12/2012	Invited talk. AGN/Torus workshop, University of Texas at San Antonio
11/2012	Invited outreach talk. Carl Sagan Day Celebration, UFPel, Brazil
11/2012	Plenary talk. Fermi Symposium, Monterey CA
9/2012	Invited talk. Princeton University
7/2012	Contributed talk. GeV to TeV: the extreme universe, COSPAR 2012 Scientific Assembly, Mysore, India
6/2012	Contributed talk. Energetic Astronomy: 65 th birthday of Richard Mushotzky, Annapolis
5/2012	Invited colloquium. York University, Toronto
5/2011	Contributed talk. Fermi Symposium, Rome
2/2011	Invited colloquium. University of Wyoming
11/2010	Invited colloquium. Catholic University of America
7/2010	Invited colloquium. Departamento de Cronologia e Raios Cósmicos, Instituto de Física Gleb Wataghin, Unicamp, Brazil
3/2010	Invited outreach talk. Encontro Regional de Ensino de Astronomia (EREA), UFRGS, Brazil
1/2010	Dissertation talk. American Astronomical Society 215 th Meeting, Washington DC
11/2009	Invited seminar. University of California at Irvine
8/2009	Contributed talk. IAU Symposium 267: Evolution of Galaxies and Central Black Holes: Feeding and Feedback, Rio de Janeiro
10/2008	Invited outreach talk. Universidade de Passo Fundo, Passo Fundo, Brazil
7/2008	Contributed talk. 37 th COSPAR Scientific Assembly, Montréal, Canada
1/2008	Invited talk. AAS Press Conference, Austin, USA