

BIOGRAPHICAL SKETCH

Name: Gustavo Aníbal Gabriel Contrera

Place and Date of Birth: Mendoza, Argentina – November 4th, 1974. **Citizenship:** Argentinean

Current Filiaions:

- Instituto de Física La Plata (IFLP) – CONICET, calle 49 y 115, La Plata, Pcia. Bs. As., Argentina. Phone: +54 221 4246062 (ext.273).
- Gravitation, Astrophysics and Cosmology Group, Facultad de Ciencias Astronómicas y Geofísicas (FCAyG), Universidad Nacional de La Plata (UNLP), Av. Centenario e/ Av. Iraola y calle 120, Paseo del Bosque, La Plata (1900), Bs. As., Argentina. Phone: +54 221 4236593 (ext.143).

e-mail addresses: contrera@fisica.unlp.edu.ar / guscontrera@gmail.com

Marital status: married

(i) PROFESSIONAL PREPARATION

Ph.D. in Science and Technology: Physics	ITJS, University of San Martín, Argentina	2011
M.Sc. in Physics	University of La Plata, Argentina	2007

(ii) APPOINTMENTS

<u>Institution</u>	<u>Rank</u>	<u>Date</u>	<u>Department</u>
Instituto de Física La Plata (CONICET).	Assistant Researcher	June 2013-Present	Physics Department
Facultad de Ciencias Astronómicas y Geofísicas, UNLP.	Postdoctoral Researcher	April 2011-May 2013	Gravitation, Astrophysics and Cosmology Group
Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)	Postdoctoral Fellow	April 2011-May 2013	Theoretical Physics
Facultad de Ciencias Exactas, UNLP.	Adjoint Professor	April 2014 - present	Physics Department
Facultad de Ciencias Exactas, UNLP.	Jefe de Trabajos Prácticos (Chief of Practical Applications)	Sept. 2010 - present	Physics Department
Facultad Regional Buenos Aires, Universidad Tecnológica Nacional.	Adjoint Professor	May 2010 – March 2011	Electrical Engineering
Facultad de Ciencias Exactas, UNLP.	Graduate Teaching Assistant	April 2008 – March 2009	Physics Department
Facultad Regional Buenos Aires,	Graduate Teaching Assistant	April 2007 –	Electronical

Universidad Tecnológica Nacional.		August 2010	Engineering
Facultad de Ciencias Exactas, UNLP.	Undergraduate Teaching Assistant	Sept. 2004 – March 2007	Physics Department

(iii) **PUBLICATIONS** ([see inSPIRE profile](#))

More Significant Publications

1. “Nonlocal $SU(3)$ chiral quark models at finite temperature: The Role of the Polyakov loop.”, Gustavo A. Contrera, Daniel Gomez Dumm, Norberto N. Scoccola, *Phys. Lett. B* **661** (2008) 113. [arXiv:0711.0139v1](#).
2. “Nonlocal Polyakov-Nambu-Jona-Lasinio model with wavefunction renormalization at finite temperature and chemical potential.”, G.A. Contrera, M. Orsaria, N. N. Scoccola, *Phys. Rev. D* **82** (2010) 054026. [arXiv:1006.4639v2](#).
3. “Meson properties at finite temperature in a three flavor nonlocal chiral quark model with Polyakov loop”, Gustavo A. Contrera, Daniel Gómez Dumm y Norberto N. Scoccola, *Phys. Rev. D* **81**, 054005 (2010). [arXiv:0911.3848](#).
4. “Quark-hybrid matter in the cores of massive neutron stars”, M. Orsaria, H. Rodrigues, F. Weber y G. A. Contrera. *Phys. Rev. D* **87**, 023001 (2013), [arXiv:1212.4213v1](#) [astro-ph.SR].
5. “Quark deconfinement in high-mass neutron stars”, M. Orsaria, H. Rodrigues, F. Weber y G. A. Contrera. *Phys. Rev. C* **89**, 015806 (2014), [arXiv:1308.1657](#) [nucl-th].
6. “Phase diagrams in nonlocal PNJL models constrained by Lattice QCD results”, G. A. Contrera, A. G. Grunfeld y D. B. Blaschke, *Phys. Part. Nucl. Lett.* Vol. 11, No. 4, p. 342 (2014), [arXiv:1207.4890v4](#) [hep-ph].
7. “Medium induced Lorentz symmetry breaking effects in nonlocal PNJL models”, S. Benic, D. Blaschke, G. Contrera, D. Horvatic, *Phys. Rev. D* **89**, 016007 (2014), [arXiv:1306.0588v3](#) [hep-ph].

Proceedings Contributions

1. “Meson masses at finite temperature in a Nonlocal $SU(3)$ chiral quark model”, Gustavo A. Contrera, Daniel Gomez Dumm y Norberto N. Scoccola, *International Journal of Modern Physics D (IJMPD)*, Vol. **19**, Issue 8-10, 1635 (2010).
2. “Nonlocal chiral quark models with Polyakov loop at finite temperature and chemical potential”, Gustavo A. Contrera, Milva G. Orsaria y Norberto N. Scoccola, *International Journal of Modern Physics D (IJMPD)*, Vol. **19**, Issue 8-10, 1703(2010). [arXiv:0912.4555HH](#).
3. “Quark Matter and Meson Properties in a Nonlocal $SU(3)$ Chiral Quark Model at Finite Temperature”, Daniel Gomez Dumm y Gustavo A. Contrera, *Physics of Atomic Nuclei*, 2012, Vol. **75**, No. 6, p. 735 (2012).
4. “Phase diagram and critical end point in nonlocal PNJL models with wavefunction renormalization”, Gustavo A. Contrera, Milva G. Orsaria y Norberto N. Scoccola, *AIP Conference Proceedings*, Vol. **1296**, p. 390 (2010).

5. "Meson properties in a nonlocal $SU(3)$ chiral quark model at finite temperature", Gustavo A. Contrera, Daniel Gomez Dumm y Norberto N. Scoccola, *AIP Conference Proceedings*, Vol. **1296**, p. 326 (2010).
6. "Nonlocal PNJL models and heavy hybrid stars", D. Blaschke, D. Alvarez-Castillo, S. Benic, G. Contrera, R. Lastowiecki. *PoS (Confinement X) 249* (2013), [arXiv:1302.6275v2](https://arxiv.org/abs/1302.6275v2) [hep-ph].
7. "Hadron-Quark Phase Transition in Quark-Hybrid Stars", G. A. Contrera, W. Spinella, M. Orsaria, F. Weber, *SLAC eConf*, C1309292 (2014), [arXiv:1403.7415](https://arxiv.org/abs/1403.7415) [hep-ph].

PhD Thesis (in Spanish)

"Estudio de propiedades hadrónicas y de materia de quarks en modelos efectivos de quarks con interacciones no locales". ([Electronic Version](#))

(iv) SYNERGISTIC ACTIVITIES

1. Seminar presented at Institut für Kernphysik, Technische Universität Darmstadt, Germany. Title: "Study of Hadron and Quark Matter Properties in Non-Local $SU(3)$ Effective Models at Finite Temperature". Date: July, 2008.
2. Oral presentation at JINR (Joint Institute for Nuclear Research), Dubna, Rusia in the HIC for FAIR School "Dense QCD Phases in Heavy-Ion Collisions". Title: "Phase diagrams and CEP determination in non-local PNJL models with WFR". Date: Agust, 2010.
3. Seminar presented at 'Institute of Theoretical Physics, Faculty of Physics and Astronomy, University of Wrocław', Polonia. Title: "Aspects of a non-local PNJL model with wave function renormalization". Date: January, 2012.
4. Oral presentation at FIAS, Frankfurt, Germany in the NICA/JINR-FAIR Bilateral Workshop "Matter at highest baryon densities in the laboratory and in space". Title: "Phase diagram in a non-local PNJL model calibrated with lattice QCD". Date: April, 2012.
5. Oral presentation at Guarujá, Brazil in the "Compact Stars in the QCD Phase Diagram III" workshop. Title: "Lattice QCD constrained non-local PNJL models in compact stars". Date: December, 2012.
6. Oral presentation at Rio de Janeiro, Brazil. "Hadron-Quark phase transition in high-mass neutron stars", in the "IV International Workshop on Astronomy and Relativistic Astrophysics (IWARA)", Workshop: Rio de Janeiro, Brazil. Del 30 de Setiembre al 03 de Octubre de 2013.
7. Participation in 7 International Schools (2 in Argentina, 2 in Brazil, 1 in Spain, 1 in Poland and 1 in Russia) and 16 International Workshops in Brazil (7), Argentina (6), Germany (1), Poland (1) and Russia (1). Poster presentations: 16.

(v) RESEARCH COLLABORATIONS

(α) Collaborators: David Blaschke (U Wrocław, Poland – JINR, Russia), Fridolin Weber (San Diego State U., USA), Norberto Scoccola (CNEA, Argentina), Milva Orsaria (FCAyG, UNLP, Argentina), Gabriela Grunfeld (CNEA, Argentina), Daniel Gomez Dumm (IFLP, La Plata U., Argentina),

Sanjin Benic and Davor Horvatic (Zagreb U., Croatia), David E. Alvarez Castillo (JINR, Russia), Rafal Lastowiecki (U Wroclaw, Poland), Hilario Rodrigues (CEFET-RJ, Brazil).

(b) Graduate and Postdoctoral Advisors

Thesis advisor: Norberto Scoccola (Tandar Lab., Argentina).

Postdoctoral advisor: Héctor Vucetich (FCAyG, UNLP, Argentina).