

# CURRICULUM VITÆ

LORENZO REVERBERI

*Name* Lorenzo Reverberi  
*Date of Birth* 15th April 1986  
*Place of Birth* Ferrara (FE), Italy  
*Nationality* Italian  
*Address* via Ragno 40  
44121 Ferrara (FE)  
Italy  
*E-mail* reverberi@fe.infn.it  
lorenzo.reverberi@gmail.com  
*Mobile - I* (+39) 328 5734950

## EDUCATION & RESEARCH

2011–2014 | *Dottorato di Ricerca (Ph.D.) in Physics*  
| *University of Ferrara, Italy*

*Advisor:* Prof. Alexander Dolgov.

*Thesis Title:* “Some Observable Effects of Modified Gravity in Cosmology and Astrophysics”.

*Fields of Research:* modified theories of gravitation, especially  $f(R)$  theories; curvature oscillations and singularities in the early- and late-time Universe and in astronomical systems; gravitational particle production and cosmic rays from modified gravity; deviations from Minkowski and Schwarzschild in modified gravity, validity of low-field approximation, possibility of gravitational repulsion.

*Final Grade:* Excellent.

2008–2010 | *Laurea Specialistica (Master’s Degree) in Physics*  
| *University of Ferrara, Italy*

*Advisor:* Prof. Alexander Dolgov.

*Thesis Title:* “Big Bang Nucleosynthesis with a Scalar Field Non-Minimally Coupled to Gravity”.

*Final Grade:* 110/110 *cum laude*.

2005–2008 | *Laurea Triennale (Bachelor's Degree) in Physics and Astrophysics*  
| *University of Ferrara, Italy*

*Advisor:* Dott. Alessandro Drago.

*Thesis Title:* "Inversione Temporale e Interazioni nello Stato Finale" ("Time Reversal and Final State Interactions").

*Final Grade:* 110/110 *cum laude*.

2000–2005 | *Liceo Scientifico Statale "A. Roiti"*  
| *Ferrara, Italy*

*Final Grade:* 100/100.

## LANGUAGES

*Italian*    mother tongue

*English*    excellent (level C2)

Certificate in Advanced English (CAE), grade A (score: 92/100)

*German*    good

*Dutch*     basic

## PUBLICATIONS

### *Peer-Reviewed*

- E.V. Arbuzova, A.D. Dolgov and **L. Reverberi**, "Jeans Instability in Classical and Modified Gravity", *Phys. Lett. B* **739**, 279 (2014), [arXiv:1406.7104 [gr-qc]].
- E.V. Arbuzova, A.D. Dolgov and **L. Reverberi**, "Spherically Symmetric Solutions in  $F(R)$  Gravity and Gravitational Repulsion", *Astrop. Phys.* **54**, 44 (2014) [arXiv:1306.5694 [gr-qc]].
- E.V. Arbuzova, A.D. Dolgov and **L. Reverberi**, "Particle Production in  $f(R)$  Gravity during Structure Formation", *Phys. Rev. D* **88**, 024035 (2013) [arXiv:1305.5668 [gr-qc]].
- **L. Reverberi**, "Curvature Singularities from Gravitational Contraction in  $f(R)$  Gravity", *Phys. Rev. D* **87**, 084005 (2013) [arXiv:1212.2870 [gr-qc]].
- E.V. Arbuzova, A.D. Dolgov and **L. Reverberi**, "Curvature Oscillations in Modified Gravity and High Energy Cosmic Rays", *Eur. Phys. J. C* **72**, 2247 (2012) [arXiv:1211.5011 [gr-qc]].
- E.V. Arbuzova, A.D. Dolgov and **L. Reverberi**, "Cosmological Evolution in  $R^2$  Gravity", *JCAP* **02**, 049 (2012) [arXiv:1112.4995 [gr-qc]].

### *Ph.D. Thesis*

- **L. Reverberi**, "Some Observable Effects of Modified Gravity in Cosmology and Astrophysics", arXiv:1406.6943 [gr-qc].

### *Proceedings*

- **L. Reverberi**, "Gravitational Contraction and Curvature Singularities in  $f(R)$  Gravity", *J. Phys. Conf. Ser.* **442**, 012036 (2013) [doi:10.1088/1742-6596/442/1/012036].

### *Medicine*

- R. Reverberi and **L. Reverberi**, "Factors affecting the antigen-antibody reaction", *Blood Transfusion* 2007 Nov; 5(4):227-240.
- R. Reverberi and **L. Reverberi**, "Removal kinetics of therapeutic apheresis", *Blood Transfusion* 2007 Jul; 5(3):164-174.
- R. Reverberi and **L. Reverberi**, "Removal kinetics of exchange transfusion", *Blood Transfusion* 2007 Apr; 5(2):93-101.

## TEACHING ACTIVITY

### *2014*

- Teaching assistant for the course "Quantum Physics III", Bachelor's Degree in Astronomy and Physics, UvA University of Amsterdam, The Netherlands.
- Teaching assistant for the course "Compact Stars", Bachelor's Degree in Astronomy and Physics, UvA University of Amsterdam, The Netherlands.

### *2012*

- Teaching assistant for the course "Physics I" (Classical Mechanics, Thermodynamics, Electromagnetism), Laurea Triennale (Bachelor's Degree) in Mathematics, University of Ferrara, Italy.
- Teaching assistant for the course "Classical Mechanics", Laurea Triennale (Bachelor's Degree) in Physics, University of Ferrara, Italy.
- Teaching assistant for the course "Elements of Quantum Mechanics", Laurea Triennale (Bachelor's Degree) in Physics, University of Ferrara, Italy.

### *2011*

- Teaching assistant for the course "Elements of Quantum Mechanics", Laurea Triennale (Bachelor's Degree) in Physics, University of Ferrara, Italy.

## SEMINARS, SCHOOLS AND CONFERENCES

- Presentation of the talk “On the production of high-energy cosmic rays in  $f(R)$  gravity” at *19th Symposium on Astroparticle Physics in the Netherlands*, Beekbergen, The Netherlands, March 2014.
- presentation of the talk “Curvature Singularities from Gravitational Contraction in  $f(R)$  Gravity” at *SW7 - Hot Topics in Modern Cosmology - Spontaneous Workshop VII*, Cargèse (Corsica), France, May 2013.
- participation to *TAM 2013 - Time and Matter*, Venice, Italy, March 2013.
- presentation of the talk “Astrophysics in  $f(R)$  Gravity: Curvature Singularities and Particle Production ” at *IDAPP 2D Meeting 2012 - Ferrara*, Italy, October 2012.
- presentation of the talk “Astrophysics in  $f(R)$  Gravity: Curvature Singularities and Particle Production” at *DICE 2012 - Castiglioncello (LI)*, Italy, September 2012.
- presentation of the talk “Radiation-Dominated Epoch in  $R^2$  Gravity” at *SW6 - Hot topics in Modern Cosmology - Spontaneous Workshop VI*, Cargèse (Corsica), France, May 2012.
- participation to the *International School of Neutrino Physics and Astrophysics*, Varenna (LC), Italy, July-August 2011.
- presentation of the seminar “Dark Matter in Galaxies”, in occasion of the *Dark Matter Awareness Week*, Ferrara, Italy, January 2011.  
See: <http://www.sissa.it/ap/events/dmg/index.html>.
- participation to *Transversity 2008*, Ferrara, Italy, May 2008.

## SKILLS

- *Computer and Programming*
  - devoted Linux user!
  - excellent programming skills: deep knowledge of C/C++ and Wolfram *Mathematica*<sup>®</sup>, basic knowledge of FORTRAN, Python
  - proficient in MS Office and equivalent suites (Libre Office, OpenOffice)
  - very good knowledge of  $\LaTeX$
  - very good use of Photoshop, GIMP
- *Music*
  - Piano, keyboards
  - Electric, acoustic and classical guitar
- *Freediving*
  - Constant-weight (CWT) personal record: 30 m, Rhodes (Greece), July 2012
  - Static (STA) personal record: 3'40"

## EXTRA

- Referee for the *Journal of Cosmology and Astroparticle Physics (JCAP)*.
- co-organiser and co-author of the problems for the initiative “Problemi dell’Universo” (“Problems of the Universe”), University of Ferrara and INFN – Sec. of Ferrara, 2011 and 2012: creation of fun, non-trivial, undergraduate-level physics problems, to be solved by students.  
See: [http://www.fe.infn.it/problemi\\_universo\\_2011/](http://www.fe.infn.it/problemi_universo_2011/)  
[http://www.fe.infn.it/problemi\\_universo\\_2012/](http://www.fe.infn.it/problemi_universo_2012/)
- guide at “Porte Aperte al Polo Scientifico-Tecnologico” (tour of the Sci-Tech Departments of the University of Ferrara).  
See: <http://www.unife.it/porteaperte/pst>