

VALERIA FERRARI *Curriculum Vitae*.

1 Generalities

Born: 21 March 1952, Monterotondo (Roma) ITALY

Marital status: Married, one daughter

Present Position: Professor of Theoretical Physics,
Department of Physics,
University of Rome *La Sapienza*
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2 Previous Academic Positions

2000 to date *Professor of Theoretical Physics* Department of Physics, University of Rome *La Sapienza*

2005-2007 Director of the Post Doctoral School in Physics, Department of Physics, University of Rome *La Sapienza*.

1993-2000 *Associate Professor* Department of Physics, University of Rome *La Sapienza*

1981-1993 *Research Associate* Department of Physics, University of Rome *La Sapienza*

1981 *Assistant Professor*, Department of Physics, University of Rome *La Sapienza*

1978-1981 Research assistant, Department of Physics, fellowship of the University of Rome *La Sapienza*

1977-1978 *Research assistant*, Istituto Plasma Spazio, Frascati, fellowship of the National Council of Research (CNR).

3 Visiting positions

1998 Visiting professor at the Enrico Fermi Institute, The University of Chicago, 3-5/98

1997 Visiting Scientist at The Albert Einstein Institute in Potsdam, 11/97

1993-1995 Visiting professor at the Enrico Fermi Institute, The University of Chicago, 2/93, 10-12/93, 8/94, 7-8/95, collaboration with Prof. S. Chandrasekhar.

1990-1992 Visiting Scientist at The Enrico Fermi Institute, The University of Chicago, 2-3/90, 11-12/90, 7-8/91, 2/92, 8/92, 10/92, collaboration with Prof. S. Chandrasekhar.

1990 Visiting Scientist at the University of Syracuse N.Y. 4/90

Visiting Scientist at the University of Bilbao, Bilbao, Spain, 6/90 collaboration with Prof. Jesus Ibanez.

1988-1989 Visiting Scientist at The Enrico Fermi Institute, The University of Chicago, 2-4/88, 1-2/89, 7-8/89, collaboration with Prof. S. Chandrasekhar.

1988 Visiting Scientist at CERN , Geneva, Switzerland, 2/88 collaboration with Prof. G. Veneziano

1986-1987 Visiting Scientist at The Enrico Fermi Institute, The University of Chicago, 5/86, 9-10/86, 2/87, collaboration with Prof. S. Chandrasekhar.

Visiting Scientist at the University of Palma de Mallorca, Palma de Mallorca, Spain 2/86, 7/87, collaboration with Prof. Jesus Ibañez.

1985 Visiting Scientist at the Institut for Theoretical Physics, Warsaw, Poland, 2/85, collaboration with Prof. S. Bazanski

Visiting Scientist at The Enrico Fermi Institute, The University of Chicago, 7-8/85, collaboration with Prof. S. Chandrasekhar.

1983 Visiting Scientist at the Institut for Theoretical Physics, Warsaw, Poland, 4/83, collaboration with Prof. S. Bazanski

Visiting Scientist at The Enrico Fermi Institute, The University of Chicago, 11/83 , collaboration with Prof. S. Chandrasekhar.

1982 Visiting Scientist at the Institut for Theoretical Physics, Köln, Germany, 3/82, 7-8/82, collaboration with Prof. B. Mashhoon.

4 Education

1976 Degree in Physics summa cum laude. Thesis: “*On dispersion phenomena in a gravitational wave antenna*”, advisor Prof. G. V. Pallottino.

5 Research Grants

1998 to date National coordinator of a project, acronymus OG51, financed by INFN (Istituto Nazionale di Fisica Nucleare), for the study of the theory and phenomenology of gravitational waves in support of the gravitational wave experiments.

2007-2010 National coordinator of the project “Studio di sorgenti, metodi di analisi dati e studio di rumore per LISA”, financed under the contract “Studi di cosmologia e fisica fondamentale” (contractor P. De Bernardis) by the Italian Space Agency (ASI).

2003-2005 Coordinator for the node *La Sapienza* of the project “Numerical simulations of gravitational wave sources: linear and non linear approaches” financed by MIUR (COFIN 2003).

2003-2005 Coordinator of the project “Emissione di onde gravitazionali da proto-stelle di neutroni” financed by MIUR under the program Azioni Integrate Italia-Spagna

2000-2003 Coordinator for the node *La Sapienza* of the EU Contract N.**HPRN-CT-2000-00137** for the project “Theoretical Foundations of Sources for Gravitational Wave Astronomy in the Next Century: Synergy between Supercomputer Simulations and Approximation Techniques”.

6 Professional Activities

Committees and Professional Service :

- Referee for the NATO Scientific Affairs Division.
 - Referee for CIVR, Committee for evaluation of Research in Italy.
 - Referee for research projects financed by MIUR.

- Member of the Committee of the International Society on General Relativity and Gravitation (1995-2004)

- Member of the Directive Committee of the Italian Society of Gravitational Physics (1996-2000,2006 to date)

- Member of the Board of the Gravitational Physics Section (GPS) of the European Physical Society (EPS) (2004 to date).

- Member of the Scientific Committee of the International Conference on General Relativity and Gravitation GR18, 8-13 July, Sidney 2007

- Chairman of the workshop “ Structure and dynamics of neutron stars” Physics Department, University of Rome La Sapienza, 11-12 March 2004

- Member of the Scientific Committee of the national Conference Problemi Attuali di Fisica Teorica IIASS ”E.R.Caianello” - Vietri sul Mare 2-7 April 2004

- Co-director with E. Coccia of the International School of Gravitation and Cosmology: “ LOOKING FOR A NEEDLE IN A HAYSTACK: how to extract a gravitational wave signal from the detectors data” Villa Mondragone, Monte Porzio Catone, 7-10 September 2004

- Member of the Scientific Committee of the XVI Italian Conference on General Relativity and Gravitational Physics, Vietri sul mare, 13-16 September 2004.

- Co-director with J. Miller and L. Rezzolla of the “ Advanced School and Conference on Sources of Gravitational Waves”, Trieste 15-26 September 2003

- Member of the Scientific Committee of the national Conference Problemi Attuali di Fisica Teorica IIASS "E.R.Caianello" - Vietri sul Mare 22-27 March 2002
- Member of the Scientific and Organizing Committee of the I VIRGO-SIGRAV School On Gravitational Waves, Cascina, Pisa, 27-31 May 2002.
- Member of the Scientific and Organizing Committee of the International School of Gravitation and Cosmology: from the Hubble length to the Planck length. Villa Mondragone, Monte Porzio Catone, 6-10 September 2002
- Member of the Scientific Committee of the XV Italian Conference on General Relativity and Gravitational Physics, Villa Mondragone, Monte Porzio Catone, 9-12 September 2002
- Member of the Scientific Committee of the national Conference Problemi Attuali di Fisica Teorica IIASS "E.R.Caianello" - Vietri sul Mare 14-19 Aprile 2000
- Chairman of the international Conference "Gravitational Waves: a Challenge to theoretical astrophysics" ICTP, Trieste, 5-9 June 2000
- Member of the Scientific and Committee of the XIV Italian Conference on General Relativity and Gravitational Physics, Genova, 18-22 September 2000
- Member of the Scientific Committee of the national Conference Problemi Attuali di Fisica Teorica IIASS "E.R.Caianello" - Vietri sul Mare 26 March - 1 April 1999
- Member of the Scientific and Organizing Committee of the "Graduate School in Contemporary Relativity and Gravitational Physics" Como, 20-24 September 1999
- Member of the Scientific Committee of the International Conference of the XIII Italian Conference on General Relativity and Gravitational Physics, Bari, 20-25 September 1998.

Member of the Organizing Committee of The Second Edoardo Amaldi Conference on Gravitational Waves, CERN (Geneva) 1-4 July 1997.

Member of the Scientific Committee of the International Conference on General Relativity and Gravitation GR15, Pune, 16-22 December India 1997.

Member of the Scientific and Organizing Committee of the International Conference Gravitational Wave Data Analysis Workshop (GWDAW2), 13-15 November, Orsay 1997.

Member of the Organizing Committee of the International Conference on Gravitational Waves: Sources and Detectors, Cascina (Pisa), 19-23 Marzo, 1996.

Member of the Scientific Committee of the XII Italian Conference on General Relativity and Gravitational Physics, Roma, 23-27 September 1996.

Member of the Scientific Committee of the XI National Conference on General Relativity and Gravitation, held in Trieste in 1994.

Member of the Scientific Committee of the International Conference on General Relativity and Gravitation GR13, held in Cordoba in 1992.

Editorial :

2007 to date : member of the Editorial Board of the Journal *Classical and Quantum Gravity*.

1995-2007 Editor of The International Journal of Modern Physics D.

2004 Responsible for the Scientific Revision of the Physics lemmas for the Italian Dictionary Devoto-Oli, edition 2004

Referee for: Classical and Quantum Gravity
General Relativity and Gravitation
Physics Letters
Physical Review D
Physical Review Letters

7 Teaching

At the Department of Physics of the University of Rome *La Sapienza*:

2002 to date “General Relativity” for physicists and astronomers (master degree)

2002-2006 “Gravitational Waves, Stars and Black Holes” for physicists and astronomers (master degree)

1993-2002 “Physics” for biologists

1993-1997 and 2000-2001 PhD course: “General Relativity”

1977-1992 Teaching assistant to General Courses in Physics (Dynamics, Thermodynamics, Electromagnetism) for physicists and biologists

At the Department of Physics, Enrico Fermi Institute, The University of Chicago:

1993 Ph.D. course: “General Relativity”

1998 Ph.D. course: “Gravitational waves and the theory of stellar perturbations”

In the past years and now I have been supervising several Laurea and PhD thesis of both italian and foreign students.

8 Invited Talks

2008 – “Space, time and matter: did Einstein have the last word on gravity?” Padova, 15 January 2008

talk: “Fino a che punto la validità della Relatività Generale è confermata dagli esperimenti?”

– International School “Frontiers in Numerical Gravitational Astrophysics” Erice (Italy) June 27 -July 5 2008

talk: “Compact stars oscillations”

- 2007** – Workshop On Pulsars, Theory and Observations, Observatoire de Paris, Paris 3-4 May 2007
 talk: “Gravitational waves from neutron stars”
 – EXOCT 2007 International Symposium on Exotic States of Nuclear Matter Catania, Italy, 11-15 June 2007
 talk: “What gravitational wave say about the internal structure of neutron stars”
- 2006** – ILIAS project: first ENTApP - GWA joint meeting Paris, 23-24 January
 talk: “Pulsars and Neutron stars: source physics”
 – “Understanding Neutron Stars”, Alicante 25-27 September
 talk: Gravitational Wave Asteroseismology
- 2005** – IV VIRGO-EGO School On Gravitational Waves, Cascina, Pisa, 23-27 May
 talk: “Gravitational Wave sources I”
 talk: “Gravitational Wave sources II”
- 2004** – III VIRGO-EGO-SIGRAV School On Gravitational Waves, Cascina, Pisa, 24-28 May
 talk: “The quadrupole formalism”
 talk: “Coalescing binaries”
 – “NEB XI, Recent Developments in Gravity” , University of the Aegean on the island of Lesbos, Greece, 2-5 June
 talk: “Imprint of the equation of state of dense matter on gravitational waves emitted by oscillating neutron stars”
 – International School of Gravitation and Cosmology: “ LOOKING FOR A NEEDLE IN A HAYSTACK: how to extract a gravitational wave signal from the detectors data” Villa Mondragone, Monte Porzio Catone, 7-10 September
 talk: “Stellar and Black hole perturbations”
 – 9th Summer Institute on: Particles, Gravity and Cosmology, August 30-September 10, Laboratori Nazionali del Gran Sasso, Assergi, Italy
 talk: ”A Review of the Sources of Gravitational waves”
 – Sixth International Symposium on Frontiers of Fundamental and

Computational Physics (FFP6), 26-29 September, Udine Italy
Invited talk: "Gravitational wave sources"

- 2003** – XXXVIII Rencontres de Moriond: Gravitational Waves and Experimental Gravity Les Arcs 22-29 March
talk: "Gravitational waves from neutron stars"
– II VIRGO-EGO-SIGRAV School On Gravitational Waves, Cascina, Pisa, 27-31 May
talk: "Sources of Gravitational waves"
talk: "Coalescing Binaries"
– LXXXIX Congresso Nazionale Societa' Italiana di Fisica, Parma 17 - 22 September
talk: "Gravitational waves, a tool for testing the internal structure of neutron stars"
– Thinking, Observing and Mining the Universe, Sorrento 22-27 September
talk: "Gravitational Waves from classes of astrophysical objects: expected signals and possibility of detection by interferometric detectors"
- 2002** – Relatività Numerica: Astrofisica Relativistica sul computer, Parma 19 February
talk: "Quali informazioni le onde gravitazionali danno sulla struttura e sull'evoluzione delle sorgenti di onde gravitazionali"
– I VIRGO-SIGRAV School On Gravitational Waves, Cascina, Pisa, 27-31 May
talk: "Sources of Gravitational waves"
talk: "Coalescing Binaries"
– GWADAW2002, Kyoto 17-19 December
talk: "Gravitational waves from neutron stars at different stages of evolution"
- 2001** – 2nd Meeting of the EU Network on "Theoretical Foundations of Sources for Gravitational Wave Astronomy of the Next Century: Synergy between Supercomputer Simulations and Approximation Techniques" Kalithea (Chalkidiki, Greece), 6-10 June 2001.
talk: "Perturbations of stars and black holes"
– 25th J. Hopkins Workshop on Current Problems in Particle Theory: 2001: A Relativistic Spacetime Odyssey, Florence 3-5 September 2001.

- talk: “Sources of gravitational waves”
 – Encuentros Relativistas Espanoles 2001, Madrid 18-21 September
 talk: “Perturbations of black holes”
 talk: “Stellar perturbations”
 – LXXXVII Congresso Nazionale Società Italiana di Fisica, Milano - Bicocca, 24-29 September
 talk: “Onde Gravitazionali”
- 2000** – CAPP2000, Conference on Cosmology and Particle Physics, 17-28 July, 2000, Verbier (Switzerland)
 talk: “Sources of gravitational Waves”
 – Giornate di studio su Fisica delle Particelle, Astrofisica e Cosmologia, 22-24 October, 2000, Laboratori Nazionali del Gran Sasso, Assergi (Italy)
 talk: “Onde Gravitazionali: sorgenti”
- 1999** – Meeting of the German Physical Society, Heidelberg 15-19 March
 talk: “Different approaches to the study of the Gravitational Radiation emitted by Astrophysical Sources”.
 – “The Annual Nordic-Trieste Astrophysical TAN-TA Workshop: Astrophysical Sources of Gravitational Radiation” Trieste, August 15-September 15
 talk: “Theory of Gravitational Radiation”
- 1998** – “International Euroconference on 3k Cosmology” Roma, 5-10 October
 talk: “Gravitational Wave Backgrounds of Astrophysical Origin”.
- 1997** – Cortona 97, Convegno informale di Fisica Teorica delle Particelle, 4-7 June, Villa Olmo (Como)
 talk: “Gravitational wave emission from astrophysical sources”
 – ”Discrete Structure and Physics” Torino, 9-11 June
 talk: “The Regge theory of potential scattering and the non-radial oscillations of stars”.
 – VI Seminario Nazionale di Fisica Teorica , Dipartimento di Fisica - Universit di Parma Istituto Nazionale di Fisica Nucleare, Parma, 1-12 September
 Four lectures on “The theory of gravitational waves”

– Les Houches Summer School of Theoretical Physics Les Houches, 22-26 September

talk: “Gravitational wave sources”

1996 – International Conference on Gravitational Waves: Sources and Detectors, Cascina (Pisa), 19-23 March

talk: “Gravitational waves from stars and black holes”

– National Conference “PROBLEMI ATTUALI DI FISICA TEORICA” Vietri (Salerno) 28 March-3 April

talk: “Gravitational waves and their generation”

– “Prospettive dell’Astrofisica alle soglie del 2000” XL Riunione della S.A.It Roma, 7-11 May

talk: “Fisica delle onde gravitazionali”

– XII Congresso della Societa’ Italiana di Relativita’ Generale e Fisica della Gravitazione Roma (Istituto Superiore di Sanita’), 23 - 27 September

talk: “Astrophysical sources of gravitational waves”

– ICRA-IKI Meeting on Relativistic Astrophysics and Cosmology, Roma 7-12 October

talk: “Sources of gravitational waves”

– Symposium on “Black Holes and Relativistic Stars” Chicago, 14-15 December

talk: “Gravitational waves, stars and black holes”

1994 – First Edoardo Amaldi Conference on Gravitational Wave Experiments. Frascati 14-17 June, Chairman of the workshop “Sources and telescopes”.

– Marcel Grossmann Meeting MG7, Stanford 24-30 July, Chairman of the workshop “Perturbations of stars and black holes”.

– Marcel Grossmann Meeting MG7, Stanford 24-30 July,

talk: “Non radial pulsations of compact objects in general relativity: an overview”

– XI Convegno Nazionale di Relativita’ Generale e Fisica della Gravitazione. Trieste 23-28 September

talk: “The theory of perturbations of stars and black holes”

1993 – 6th Gregynog Relativity Workshop “Perturbation Theory of Black holes and Neutron stars”

talk: “A review on the theory of stellar oscillations: what do we learn from general relativity”

1992 – X Convegno nazionale di Relativita’ Generale e Fisica della Gravitazione, Bardonecchia (Torino), 1-4 September

talk: “Non-radial oscillations of stars: a scattering problem”

1989 – International Conference on General Relativity and Gravitation GR12, Boulder, Colorado (U.S.A.) 2-7 July

talk: “Colliding waves in General Relativity”

1988 – VIII Convegno nazionale di Relativita’ Generale e Fisica della Gravitazione, Cavalese (Trento), 3 September

talk: “Non linear interaction of gravitational waves”

1987 – Second Joint Meeting on theoretical Physics with the Landau Institute of Academia Nauk , Moscow 11-19 September

talk: “Soliton solutions of the Einstein equations for the collision of gravitational plane waves”

1985 – IV Marcel Grossmann Meeting, Roma 17-22 June, Chairman of the workshop ”Black Holes”.

– Joint Astroparticle Physics Meeting With The Landau Institute Of Academia Nauk Roma, 9-12 November

talk: “Impulsive waves in General Relativity”

1984 – The First Joint Meeting of the Landau Institute of the Soviet Academy of Sciences and the Department of Physics of the University of Rome, Roma 4-9 June

talk: “Scattering and focussing of impulsive gravitational waves”.

2006 Gravitational Wave Advanced Detectors Workshop - VESF meeting La Biodola, Isola d’Elba (Italy) - May 27th -June 2nd, Chairman of the morning session of May 28th.

2003 Fifth Edoardo Amaldi Conference on Gravitational Waves. Tirrenia (Pisa) 6-11 July, session “GW sources”

- 2002** XV SIGRAV Conference on General Relativity and Gravitation, Villa Mondragone Monte Porzio Catone, Roma, Italy September 9-12, 2002, Chairman of the plenary session on September 11th.
Advanced School and Conference on Sources of Gravitational Waves, Trieste 15-26 September 2003, Chairman of the opening session
- 1994** First Edoardo Amaldi Conference on Gravitational Wave Experiments. Frascati 14-17 June, session “Sources and telescopes”.
Marcel Grossmann Meeting MG7, Stanford July 24-30 , session “Perturbations of stars and black holes”.
- 1997** Second Edoardo Amaldi Conference on Gravitational Waves. CERN 1-4 July, session “Discrete sources of gravitational waves”.