

Curriculum Vitae

First and last name: Giovanna Tinetti

Date and city of birth: April 1st 1972, Torino, Italy

Current Position: Research Associate

Affiliation: NASA Astrobiology Institute/National Academies-Caltech/NASA-JPL

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Education

- *PhD. in Theoretical Physics*, (University of Torino, 2002), thesis advisor: Prof. L. Sertorio
- *Master in Fluid-dynamics and Energetics*, Engineering Faculty, University of Torino (1998). ENEA award for best dissertation, advisor Prof. G. Fracastoro).
- *Master in Astrophysics*, Department of Theoretical Physics, University of Torino (1997)
- *Undergraduate studies in Theoretical Physics*, (University of Torino, Italy, 1997), Summa cum Laude and final dissertation published, mentors Prof. L. Sertorio.

Honors, Awards and Memberships

- NASA Astrobiology Institute/National Academies award, (3 awarded nationwide, USA, May 2003).
- SIF (Italian Society of Physics) Award for best young Italian physicist, (1 awarded nationwide, Oct. '99, Pavia, Italy).
- ENEA award for best dissertation in 1998, (Engineering Faculty, Torino, Italy, 1998)
- Thesis completed with Honors and published, (University of Torino, Italy 1997)
- Currently member of the American Geophysical Union (AGU), American Astronomical Society/Division of Planetary Science (AAS/DPS), European Geophysical Union (EGU), Italian Society of Physics (SIF). Member of the EEC CARNET program, Pan European Carnet Network from '97 to 2000.

Research interests

Extra-solar planets, atmospheric science, remote-sensing spectroscopy, radiative transfer/climate modeling, statistical mechanics, non-equilibrium thermodynamics, mathematical and numerical modeling, complexity and chaos theory.

Research experiences

- Current position: NAI/NRC (NASA Astrobiology Institute, National Academies) Research Associate, collaborating with NAI-Virtual Planetary Laboratory, NASA-JPL/Caltech). Research title: *Light-curves and Disk-averaged spectra for Terrestrial Planets*.
- Postdoctoral position at NASA-JPL/USC, (supervisor Dr. K. Nealson), '01-'03.
- Fellowship at the Department of Theoretical Physics and Astronomical Observatory of Torino, (2000-2001), "*Thermodynamics of Planetary Systems and their compatibility with the necessary conditions for the existence of an Ecosystem*" (supervisor Prof. L. Sertorio).

Teaching experiences

- Assistant to Prof. L. Sertorio, *Statistical Mechanics*, Faculty of Physics, Torino, academic years '97-'98, '98-'99, '99-2000. Plus lecture notes on Thermodynamics and Statistical Mechanics (<http://spider.ipac.caltech.edu/staff/tinetti/lectures/lectures.htm>)
- Assistant to Prof. L. Ferrero, *General Physics*, Faculty of Physics, (Torino, 2000-2001).
- Assistant to Prof. E. Predazzi and prof. M. Anselmino, *Introduction to Quantum Mechanics*, Faculty of Physics, Torino, academic year '99-2000.

Publications

Journal articles and Books (<http://spider.ipac.caltech.edu/staff/tinetti/papers/>)

- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Kiang, N.; Fishbein, E., Velusamy, T., Bosc, E., and Turnbull M.; *Light-curves and Disk-averaged Synthetic Spectra of Earth*, (submitted to *Astrobiology*, 2005, p. 30, <http://xxx.arxiv.org/abs/astro-ph/0502238>)
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Velusamy, T., Snively, H.; *Disk-averaged synthetic spectra of Mars*, (accepted by *Astrobiology*, 2004, 35 p., <http://xxx.arxiv.org/abs/astro-ph/0408372>)
- L. Sertorio & **G. Tinetti**, *Constraints in the Coupling Star-Life*, (*Il Nuovo Cimento*, vol. 25 C, N. 4, pag. 457-499, July-August 2002)
- L. Sertorio & **G. Tinetti**, *Available Energy for Life on a Planet, with or without Stellar Radiation*, (*Il Nuovo Cimento*, Vol. 24 C, n. 3, May-June 2001)
- L. Sertorio & **G. Tinetti**, *Global and Niche Ecosystem in a Simple Dynamical Model*, (*Il Nuovo Cimento*, Vol. 23 C, n. 6, Nov.-Dec. 2000, 679-695)
- L. Sertorio & **G. Tinetti**, *Prey-Predator Dynamics driven by the Solar Radiation*, (*Il Nuovo Cimento*, Vol. 23 C, n. 6, Nov-Dec. 2000, pag. 635-654)
- L. Sertorio & **G. Tinetti**, *Prey-Predator Dynamics with Periodic Solar Input*, (*Il Nuovo Cimento*, Vol. 23 C, n. 6, Nov-Dec. 2000, pag. 655-677)
- L. Sertorio & **G. Tinetti**, *Non equilibrium thermodynamics with controls*, chapter n. 5 of the volume: "Thermodynamics of Energy Conservation and Transport", (Springer Verlag, 2000)
- L. Sertorio & **G. Tinetti**, *Entropy Production for Closed Open & Third Kind System*, (*La Rivista del Nuovo Cimento*, Vol. 22, N. 5, pag. 1-87, 1999)
- Storrie-Lombardi, M.C., Corsetti, F.A., Grigolini, P., Ignaccolo, Galatolo, S., & **Tinetti, G.**, *Complexity Analysis to Explore the Structure of Ancient Stromatolites*, (*Chaos and Sol.*, 20(1), 139-144, Apr. 2004)
- L. Sertorio & **G. Tinetti**, *Available Energy for Extraterrestrial Life*, (*Il Giornale di Fisica*, Vol. 43, Issue 2, P. 65-80, 2002)
- L. Sertorio & **G. Tinetti**, *Stationary Ecosystem*, (*Il Giornale di Fisica*, Vol. XL - N. 1 -Gennaio-Marzo 1999, Editrice Compositori Bologna)

Proceedings and Abstracts

- **Tinetti, G.**; Crisp, D.; Meadows, V.; *A climate model for terrestrial planets*, Astrobiology 2005, in press.
- **Tinetti, G.**; Meadows, V.; Crisp, D.; Fong, W.; Kiang, N.; Velusamy, T.; Fishbein, E.; Bosc, E.; Turnbull, M., *Detectability of planetary surface biosignatures: Modeled and measured disk-averaged spectra of the Earth*, (European Geophysical Union G. A., April 2005, EGU05-A-00999)
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Velusamy, T.; E., M. Allen; *Disk-averaged Synthetic Spectra and Light Curves for Terrestrial Planets*, (American Astronomical Society, 36th DPS, 42.08, Nov. 2004)
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Velusamy, T.; Fishbein, E., M. Allen; *Disk-averaged spectra & Light Curves for Terrestrial Planets*, Proceeding to the II TPF-Darwin International Conference 2004, <http://planetquest1.jpl.nasa.gov/TPFDarwinConf/proceedings/posters/p063.pdf>
- **G. Tinetti**, D. Crisp, V. S. Meadows, J. Armstrong and C. Parkinson; *Sensitivity of Extrasolar Terrestrial Planets' climate to different orbital geometries*, Astrobiology, Vol. 4, n. 2, 2004
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Velusamy, T.; Fishbein, E., *Sensitivity to environmental properties in globally averaged synthetic spectra of Mars and Earth*, (European Geophysical Union G. A., April 2004, EGU04-A-04947)
- Meadows, V., Von Hippel, T., and **Tinetti, G.**; *Using Artificial Neural Networks for Analysis and Discrimination of TPF Planetary Spectra*, International Journal of Astrobiology, Vol. 3, Is. S1, January 2004, pp 35
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Velusamy, T.; Fishbein, E.; *Detectability of surface and atmospheric properties of Earth-like and Mars-like planets from disk-averaged synthetic spectra*, International Journal of Astrobiology, Vol. 3, Is. S1, January 2004, pp 34
- D. Crisp, **G. Tinetti**, J. Armstrong, C. Parkinson; *A comprehensive climate model for extra-solar terrestrial planets*, International Journal of Astrobiology, Vol. 3, Is. S1, January 2004, pp 35
- Crisp, D.; Meadows, V. S.; Parkinson, C. D.; Allen, M. A.; Velusamy, T.; **Tinetti, G.**; Rye, R.; Krelow, K.; *The Astronomical Detection of Biosignatures on Extrasolar Terrestrial Planets: The Virtual Planetary Laboratory*, (American Astronomical Society, 35th DPS 35, 18.02, Sep. 2003)
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Snively, H.; Velusamy, T., *Detectability of Planetary Characteristics from Spatially and Spectrally-Resolved Models of Terrestrial Planets: Mars and Earth*, (American Astronomical Society, 35th DPS, 18.14, Sep. 2003)
- **Tinetti, G.**; Meadows, V. S.; Crisp, D.; Fong, W.; Velusamy, T.; Fishbein, E., *Sensitivity to environmental properties in globally averaged synthetic spectra of Earth*, (American Geophysical Union, Dec. 2002, P41B-0414)
- **Tinetti, G.**, Fong, W.T., Snively, H., Meadows, V., Crisp, D., & Storrie-Lombardi, M.C., *Disk Averaged Synthetic Spectra of Mars*, Proceeding NASA Astrobiology Institute 2003, p. 521
- **Tinetti, G.**, Luigi, L., *Constraints in the coupling Star-Life*, Proceeding Second NASA Astrobiology Science Conference, 2002

- Storrie-Lombardi, M.C., Grigolini, P., Galatolo, S., **Tinetti, G.**, Ignaccolo, M., Allegrini, P. & Corsetti, F.A. 2003, *Advanced techniques in complexity analysis for the detection of biosignatures in ancient and modern stromatolites*, Proceeding NASA Astrobiology Institute 2003, p. 524-525

Scientific Presentations

- Oral Presentation, "NASA Astrobiology Institute Biennial meeting", Boulder, Colorado, April-2005
- Invited talk, Institute d'Astrophysique de Paris, (IAP), Paris, France, January 2005
- Oral Presentation, AAS/Division of Planetary Science, Louisville, Kentucky, November 2004
- Oral Presentation, "Bioastronomy 2004 - Habitable worlds", Iceland, July 7-11, 2004
- Poster presentation, "TPF and Darwin", July 2004, San Diego USA
- Invited talk , Department of Planetary Sciences (GPS), Caltech, June 22, 2004
- Poster presentation, EGU annual conference, April 2004, Nice, France.
- Invited talk , IPAC symposium, Caltech, April 2, 2004
- Oral Presentation, "Annual Conference of Astrobiology", March 28-31, 2004, NASA-Ames
- Invited talk, University of Pisa, Department of Mathematics, Italy, January 2004
- Invited talk, Astronomical Observatory of Torino, Italy, January 2004
- Invited talk, University of Torino Faculty of Physics, Italy, January 2004
- Poster presentation, "Astrobiology Science Conference 2004", March 2004, NASA Ames Research Center.
- Poster presentation, AGU annual conference, December 2003, San Francisco.
- Poster presentation, DPS meeting, Monterey, September 2003.
- Poster presentation, the "Astrobiology Science Conference", February 2003, Tempe.
- Conference, "Astrobiology", Escorial, Madrid, July 2002
- Poster presentation, "Astrobiology Science Conference 2002", April 2002, NASA Ames Research Center.
- Oral presentation, "Complex Systems", Arcidosso, Grosseto, Italy, September 2001.
- Conference "Non Extensive Thermodynamics", Cagliari, Villa Simius, Italy. May 2001.
- Poster Presentation, "SIAM Pacific Rim Dynamical Systems Conference", August 2000. Maui, Hawaii.
- Oral presentation, National Conference of Bio-ecophysics, Turin, February 2000.
- Invited talk, EEC CARNET annual meeting, Lac Balaton, Hungary, August 1999.
- Oral presentation, National Conference of Bio-ecophysics, Florence, February 1999.
- Invited talk, EEC CARNET annual meeting, Prague, April 1998.

Computer science

Proficient with F90, F77, IDL programming, very good knowledge of Unix, Linux, Windows and Solaris OS.

Languages

Native Italian, fluent in English and French written and spoken, good understanding of Spanish.