

## CURRICULUM VITAE of Stefano Fantoni

BORN: 1945,

### EDUCATION

1968: degree 'Dottore in Fisica', Pisa (Italy)

1971: PhD 'Perfezionamento in Fisica', Scuola Normale Superiore, Pisa (Italy)

### PROFESSIONAL EXPERIENCE

1972-1986: Associate Professor at the Department of Physics, Pisa (Italy)

1986-1992: Full Professor at the Department of Physics, Lecce (Italy)

1992-2011: Full Professor at SISSA, Trieste (Italy)

1991-2000: Director of the SISSA Interdisciplinary Laboratory, Trieste (Italy)

1994-2004: Director of the SISSA Master in Science Communication, Trieste (Italy)

2004-2010: Director of SISSA

2011-2016: President of the National Agency for the evaluation of the Universities and the Research Institutes (ANVUR)

### VISITS AT OTHER SCIENTIFIC INSTITUTIONS

1977: Visiting Scientist at the Niels Bohr Institute in Copenhagen, (Denmark) (six months)

1979: Visiting Scientist at the Department of Physics, Koln, (Germany) (six months)

1981-1982: Visiting Associate Professor at the Department of Physics, University of Illinois at Urbana--Champaign (USA)

1984: Visiting Associate Professor at the Department of Physics, University of Illinois at Urbana--Champaign (USA) (six months)

1990: Visiting Professor at Jefferson Laboratory (CEBAF), Newport News, Virginia (USA) (six months)

2000: Visiting Professor at the Theory Center in Seattle, Washington (USA) (three months)

### SCIENTIFIC ACTIVITIES

*World leader in the development of Many-Body methods for strongly correlated Fermi systems:*

- Fermi Hyper-Netted Chain (FHNC) theory
- Correlated Basis Function theory
- Auxiliary Field Diffusion Monte Carlo method

*Research area of interest:*

- Nuclear Physics: structural and dynamical properties of nucleon matter and nuclei
- Nuclear Astrophysics: hadronic matter at high density and low temperature in compact stars and supernovae
- Low temperature Physics: structural and dynamical properties of quantum liquids and droplets; BEC and superfluidity in dilute atomic gas
- Strongly correlated electron systems

*Scientific production:*

- Co-editor of several Conference Proceedings
- Author or co-author of more than 200 papers published in international journals and refereed Conference Proceedings. These papers have more than 4000 citations from more than 600 other scientific articles in the international literature.

Twenty of the most significant papers are listed in the following:

- A. Lovato, O. Benhar, S. Fantoni and K.E. Schmidt: Comparative study of three-nucleon potentials in nuclear matter, *Phys. Rev. C*, 85,024003 (2012);
- A. Lovato, O. Benhar, S. Fantoni, A.Y. Illarionov and K.E. Schmidt: Density dependent NN interaction from three-nucleon forces, *Phys. Rev. C*, 83,054003 (2011);
- S. Gandolfi, A.Y. Illarionov, S. Fantoni et al. "Equation of state of superfluid neutron matter and the calculation of the s-1(0) pairing gap" *Physical Review Letters* 101 (13), 132501 (2008)
- S. Gandolfi, F. Pederiva, S. Fantoni, et al. "Quantum Monte Carlo calculations of symmetric nuclear matter" *Physical Review Letters* 98 (10), 102503 (2007);
- S. Moroni, A. Sarsa, S. Fantoni, K.E. Schmidt and S. Baroni, "Structure, rotational dynamics and superfluidity of OCS doped He clusters", *Physical Review Letters*, 90, 143201 (2003);
- S. Fantoni, T. M. Nguyen, S. R. Shenoy and A. Sarsa: "Number-conserving model of boson pairing", *Phys. Rev. A* 66,033604 (2002);
- S. Fantoni, A. Sarsa and K.E. Schmidt, "Spin susceptibility of neutron matter at zero temperature", *Physical Review Letters*, 87, 81101 (2001);
- S. Giovannazzi, A. Smerzi and S. Fantoni, "Josephson effects in dilute Bose-Einstein condensates", *Physical Review Letters*, 84, 4521 (2000);
- S. Raghavan, A. Smerzi, S. Fantoni, S.R. Shenoy, "Coherent oscillation between two weakly coupled Bose-Einstein condensates: Josephson effects,  $\Pi$ -oscillation and macroscopic quantum self-trapping", *Phys. Rev. A*, 59, 620 (1999);
- K.E. Schmidt and S. Fantoni, "A quantum Monte Carlo method for nucleon systems", *Physical Review Letters*, 99, B446, (1999);
- Smerzi, S. Fantoni, S. Giovannazzi, et al. "Quantum coherent atomic tunneling between two trapped Bose-Einstein condensates" *Physical Review Letters* 79 (25), 4950-4953 (1997);
- F. Pederiva, A. Ferrante, S. Fantoni and L. Reatto, "Quantum theory of solid-liquid coexistence and interface", *Physical Review Letters*, 72, 2589 (1994);
- O. Benhar, A. Fabrocini, S. Fantoni, G.A. Miller, V.R. Pandharipande, I. Sick, "Scattering of few GeV electrons by nuclear matter", *Physical Review Letters*, C44, 2328 (1991);
- S. Fantoni and V.R. Pandharipande: "Orthogonalization of correlated states", *Phys. Rev. C* 37, 1697 (1988);
- S. Fantoni, V.R. Pandharipande "Momentum distribution of nucleons in nuclear-matter" *Nuclear Physics, A* 427 (3): 473-492 (1984);
- S. Fantoni: "Linked-cluster perturbative expansion in correlated theory" *Phys. Rev. B* 29, 2544 (1984);
- S. Fantoni: "Correlated BCS Theory", *Nucl. Phys. A* 363, 381 (1981);
- S. Fantoni: "Momentum distribution of Boson and Fermi systems in Jastrow theory", *Nuovo Cimento A* 44, 191 (1978);
- S. Fantoni, S. Rosati "Hypernetted-chain approximation for a fermion system" *Nuovo Cimento A* 25 (4): 593-615 1975

- S. Fantoni and S. Rosati: "Jastrow correlations and an irreducible cluster expansion for infinite boson or fermion system" A 20, 179 (1974)

**In July 2007 Stefano Fantoni has been awarded with The Feenberg Medal for his contribution to Nuclear Physics and the development of the Fermi High Netted Chain Theory.**

#### OTHER PROFESSIONAL ACTIVITIES

- Referee of several research funding agencies, including NSF (USA) and the Italian "Comitato dei Garanti" and of several scientific journals
- Organizer of several international conferences and schools
- Director of the Elba International Physics Centre (EIPC), Isola d'Elba, Italy (1986-1992);
- Member of the Board of Directors of the European Centre for Theoretical studies in Nuclear Physics and Related Areas, ECT\*, Trento, Italy (1993-1995)
- Member of the editorial board of the series "Recent Progress in Many--Body theories", World Scientific and Associate editor of Nuclear Physics A, North-Holland
- Member of the scientific council of the Theory group of INFN (1978-1980)
- Member of the Program Advisory Committee (PAC) of the Jefferson Laboratory (CEBAF), Newport News, Virginia, (USA) (1989-1993)
- PAC member of Legnaro Laboratories of INFN, Legnaro, Italy (1991-1993)
- Chairman of the PAC of the Legnaro Laboratories of INFN, Legnaro, Italy (1994-1996)
- Italian delegate in the OCSE committee "Megaforum Science: Nuclear Physics", (1997-1998)
- Member of EU Evaluation Committee INTAS -2000
- Member of the International Advisory Committee of the Institute for Advanced Studies, *Collegium Budapest*, since 2003
- Member of the Governmental Committee on "Public Understanding of Science", 1995-1997, 2009
- Member of EU Evaluation Committee FP7 – Science in society – 2008
- President of the *Fondazione sulla libert  delle Scienze*, Trieste, Italy from 2008 to 2011 and from 2016 since now
- President of the Trieste association of *Alliance Francaise* 2008-2015
- Member of Governmental Committee FIRB (the governmental agency to finance basic and applied research oriented towards technological innovation).

#### ACTIVITY AND PRODUCTION IN POPULARIZATION OF SCIENCE

*Founder of the first Italian Master in Science Communication, SISSA, Trieste, Italy, (1993)*

- Organizer of several national meetings on popularization of science
- Author of several articles in newspapers and journals and research paper on science communication;
- Co-editor of more than 20 books in popularization of science
- President of the Trieste International Science Media Fair (FEST) (2007 and 2008 editions)

**For his innovative activity in the popularization of science Stefano Fantoni has been awarded by UNESCO in 2001 with the Kalinga prize**

He has been awarded with other important prizes

- 2002 Piazzano prize
- 2004 *Pirelli International* prize
- 2005 *Capo d'Orlando* prize
- 2008 Premio Rosa d'argento
- 2010 Premio Barcarola della città di Trieste