

## List of publications

1. R. Franzosi and E. Guadagnini, "Particle decays and space-time kinematics in  $(2 + 1)$  gravity", *Nuclear Physics B* **450** (1995) 327-354
2. R. Franzosi and E. Guadagnini, "Topology and classical geometry in  $(2 + 1)$  gravity", *Class. Quantum Grav.* **13** (1996) 433-460
3. M. Cerruti-Sola, R. Franzosi and M. Pettini, "Lyapunov exponents from geodesic spread in configuration space", *Phys. Rev. E* **56** 4872 (1997)
4. R. Franzosi, M. Ghilardi and E. Guadagnini, "Modular transformations and one-polygon tessellation", *Phys. Lett. B* **418** (1998) 42-45
5. R. Franzosi, L. Casetti, L. Spinelli and M. Pettini, "Topological aspects of geometrical signatures of phase transitions", *Phys. Rev. E* **60** R5009 (1999)
6. R. Franzosi, M. Pettini and L. Spinelli, "Topology and phase transitions: a paradigmatic evidence", *Phys. Rev. Lett.* **84**, 2774 (2000)
7. R. Franzosi, R. Gatto, G. Pettini and M. Pettini, "Analytic Lyapunov exponents in a classical nonlinear field equation", *Phys. Rev. E* **61** R3299 (2000)
8. R. Franzosi, V. Penna and R. Zecchina, "Quantum Dynamics of coupled Bosonic Wells within the Bose-Hubbard Picture", *Int. Jour. of Mod. Phys. B* Vol. **14**, No. 9 (2000) 943-961
9. R. Franzosi and V. Penna, "Spectral Properties of Coupled Bose-Einstein Condensates", *Phys. Rev. A* **63**, 043609-1 (2001)
10. R. Franzosi and V. Penna, "Self-trapping mechanisms in the dynamics of three coupled Bose-Einstein condensates", *Phys. Rev. A* **65**, 013601-1 (2001)
11. R. Franzosi and V. Penna, "Spectral Properties and Self-Trapping Effect in Coupled Bose-Einstein Condensates", *Laser Physics*, Vol **12**, No.1, (2002), pp. 71-76
12. R. Franzosi and V. Penna, "Chaotic behavior, collective modes and self-trapping in the dynamics of three coupled Bose-Einstein condensates", *Phys. Rev. E*, **67**, 046227 (2003)
13. P. Buonsante, R. Franzosi, and V. Penna, "Instability Effects in the Dynamics of three Coupled Bosonic Wells", *Laser Physics*, Vol **13**, No.4, (2003), p. 537-542
14. P. Buonsante, R. Franzosi, and V. Penna, "Dynamical Instability in a Trimeric Chain of Interacting Bose-Einstein Condensates", *Phys. Rev. Lett.*, **90**, 050404 (2003)
15. R. Franzosi and M. Pettini, "Theorem on the Origin of Phase Transitions", *Phys. Rev. Lett.* **92**, 60601 (2004)
16. P. Buonsante, R. Franzosi, and V. Penna, "Dynamics of twin-condensate configurations in an open chain of three Bose-Einstein condensates", *Laser Physics*, Vol **14**, No.4, (2004), p. 556-564
17. P. Buonsante, R. Franzosi and V. Penna, "From the superfluid to the Mott regime and back: triggering a non-trivial dynamics in an array of coupled condensates", *J. Phys. B*, **37**, (2004) s195-s203
18. P. Buonsante, R. Franzosi and V. Penna, "Persistence of mean-field features in the energy spectrum of small arrays of Bose-Einstein condensates", *J. Phys. B*, **37**, (2004) s229-s238
19. R. Franzosi, B. Zambon, and E. Arimondo, "Nonadiabatic effects in the dynamics of atoms confined in a cylindric time-orbiting-potential magnetic trap", *Phys. Rev. A*, **70**, 053603 (2004)
20. M. Pettini, L. Casetti, M. Cerruti-Sola, R. Franzosi, E. G. D. Cohen, "Weak and strong chaos in FPU models and beyond", Invited paper for the special issue of Chaos celebrating the 50<sup>th</sup> anniversary of the FPU article, *Chaos* **15**, 015106 (2005)
21. R. Franzosi, P. Poggi and M. Cerruti-Sola, "Lyapunov exponents from unstable periodic orbits", *Phys. Rev. E* **71**, 036212 (2005)
22. R. Franzosi, M. Cristiani, C. Sias and E. Arimondo "Coherent transport of cold atoms in angle-tuned optical lattices", *Phys. Rev. A* **74**, 013403 (2006)
23. R. Livi, R. Franzosi and G.-L. Oppo, "Selflocalization of Bose-Einstein condensates in optical lattices via boundary dissipation", *Phys. Rev. Lett.* **97**, 060401 (2006)
24. R. Franzosi, R. Livi and G.-L. Oppo, "Probing the dynamics of Bose-Einstein condensates via boundary dissipation", *Journal of Physics B* **40**, 1195 (2007)
25. R. Franzosi, M. Pettini and L. Spinelli, "Topology and Phase Transitions I. Theorem on a necessary relation", *Nuclear Physics B* **782** (2007) 189-218

26. R. Franzosi and M. Pettini, “Topology and Phase Transitions II. Entropy and Topology”, *Nuclear Physics B* **782** (2007) 219-240
27. R. Franzosi, “Nonclassical dynamics of Bose-Einstein condensates in an optical lattice in the super-fluid regime”, *Phys. Rev. A* **75**, 053610 (2007)
28. M. Cerruti-Sola, G. Cirraolo, R. Franzosi and M. Pettini, “Riemannian geometry of Hamiltonian chaos: Hints for a general theory”, *Phys. Rev. E*, **78**, 046205 (2008).
29. P. Buonsante, R. Franzosi and V. Penna, “Control of unstable macroscopic oscillations in the dynamics of three coupled Bose condensates”, *J. Phys. A: Math. Theor.* **42** (2009) 285307.
30. B. Zambon and R. Franzosi, “Dynamics of atoms in a time orbiting potential trap: consequences of the classical description”, *J. Phys. B* **43** 085302 (2010).
31. R. Franzosi, S. M. Giampaolo and F. Illuminati, “Quantum localization and bound-state formation in Bose-Einstein condensates”, *Phys. Rev. A* **82**, 063620 (2010)
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33. R. Franzosi, “Microcanonical entropy and dynamical measure of temperature for systems with two first integrals”, *J. Stat. Phys.* (2011) 143: 824–830
34. R. Franzosi, R. Livi, G.-L. Oppo and A. Politi “Discrete Breathers in Bose-Einstein Condensates”, *Nonlinearity* 24 (2011) R89-R122
35. R. Franzosi “Geometric microcanonical thermodynamics for systems with first integrals”, *Phys. Rev. E*, **85**, R050101 (2012)
36. S. Iubini, R. Franzosi, R. Livi, G.-L. Oppo and A. Politi, “Discrete breathers and negative-temperature states”, *New J. Phys.* **15** (2013) 023032.
37. R. Franzosi and R. Vaia, “Newton's cradle analogue with Bose–Einstein condensates”, *J. Phys. B*, **47** 095303 (2014)
38. R. Franzosi and R. Vaia, “Quantum Newton's Cradle with Bose-Einstein Condensates”, 2Physics.com, Sunday, June 01, 2014, <http://www.2physics.com/2014/06/quantum-newtons-cradle-with-bose.html>
39. Roberto Franzosi, Domenico Felice, Stefano Mancini, Marco Pettini, “A geometric entropy detecting the Erdős-Rényi phase transition”, *EPL*, **111** (2015) 20001.

### Not specialized press

1. Tushna Commissariat “How to build a Quantum Newton's Cradle”, *Physics World*, May 2, 2014, <http://physicsworld.com/cws/article/news/2014/may/02/how-to-build-a-quantum-newtons-cradle>

### Book Chapters

1. R. Livi, R. Franzosi and G.-L. Oppo, *Spontaneous Localization of Bose-Einstein Condensates in Optical Lattices with Boundary Dissipations*, in *Laser and Bose-Einstein Condensation Physics*, Editors: Man Mohan, Anil Kumar, Aranya B. Bhattacharjee, Anil Kumar Razdan, Narosa Publishing House, ISBN: 978-81-8487-064-0