

NPQCD

NONPERTURBATIVE PROPERTIES OF QCD

Preventivi 2023 Pisa, 1 Luglio 2022

Proprietà non-perturbative della QCD: confinamento del colore, simmetrie chirali, proprietà topologiche, diagramma di fase della QCD, QCD in campi esterni, teorie efficaci, scattering adrone-adrone, proprietà dell'assione, etc.

Simulazioni numeriche su reticolo: sviluppo di codici su architetture parallele standard ed ibride (CPU+GPU o altro), algoritmi per “Quantum Computing”.

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Pubblicazioni 2021–2022

1. C. Bonati, M. Cardinali, M. D'Elia, M. Giordano, F. Mazziotti, “[Reconfinement, localization, and thermal monopoles in \$SU\(3\)\$ trace-deformed Yang-Mills theory](#)”, Phys. Rev. D 103, 034506 (2021).
2. C. Bonanno, C. Bonati, M. D'Elia, “[Large- \$N\$ \$SU\(N\)\$ Yang-Mills theories with milder topological freezing](#)”, JHEP 03 (2021) 111.
3. A. Candido, G. Clemente, M. D'Elia, F. Rottoli, “[Compact gauge fields on Causal Dynamical Triangulations: a 2D case study](#)”, JHEP 04 (2021) 184.
4. A. Athenodorou, M. Cardinali, M. D'Elia, “[Spectrum of trace deformed Yang-Mills theories](#)”, Phys. Rev. D 104, 074510 (2021).
5. A. Di Giacomo, “[A gauge invariant order parameter for monopole condensation in QCD vacuum](#)”, JHEP 02 (2021) 208.
6. M. Cardinali, M. D'Elia, F. Garosi, M. Giordano, “[Localization properties of Dirac modes at the Roberge-Weiss phase transition](#)”, Phys. Rev. D 105, 014506 (2022).
7. M. D'Elia, L. Maio, F. Sanfilippo, A. Stanzione, “[Phase diagram of QCD in a magnetic background](#)”, Phys. Rev. D 105, 034511 (2022).
8. N. Carabba, E. Meggiolaro, “[Study of some local and global \$U\(1\)\$ axial condensates in QCD at finite temperature](#)”, Phys. Rev. D 105, 054034 (2022).

9. C. Bonati, M. Caselle, S. Morlacchi, “The Unreasonable effectiveness of effective string theory: The case of the 3D $SU(2)$ Higgs model”, Phys. Rev. D 104, 054501 (2021).
10. C. Bonati, A. Franchi, A. Pelissetto, E. Vicari, “Two-dimensional lattice $SU(N_c)$ gauge theories with multiflavor adjoint scalar field”, JHEP 05 (2021) 018; “Three-dimensional lattice $SU(N_c)$ gauge theories with multiflavor scalar fields in the adjoint representation”, Phys. Rev. B 104, 115166 (2021); “Phase diagram and Higgs phases of three-dimensional lattice $SU(N_c)$ gauge theories with multiparameter scalar potentials”, Phys. Rev. E 104, 064111 (2021).
11. C. Bonati, A. Pelissetto, E. Vicari, “Breaking of Gauge Symmetry in Lattice Gauge Theories”, Phys. Rev. Lett. 127, 091601 (2021); “Lattice gauge theories in the presence of a linear gauge-symmetry breaking”, Phys. Rev. E 104, 014140 (2021).
12. C. Bonati, A. Pelissetto, E. Vicari, “Multicritical point of the three-dimensional Z_2 gauge Higgs model”, Phys. Rev. B 105, 161538 (2022).
13. C. Bonati, A. Pelissetto, E. Vicari, “Critical behaviors of lattice $U(1)$ gauge models and three-dimensional Abelian-Higgs gauge field theory”, Phys. Rev. B 105, 085112 (2022).
14. C. Bonati, A. Pelissetto, E. Vicari, “Three-dimensional monopole-free CP^{N-1} models: Behavior in the presence of a quartic potential”, arXiv:2202.04614.
15. C. Bonati, A. Pelissetto, E. Vicari, “Scalar gauge-Higgs models with discrete Abelian symmetry groups”, arXiv:2204.02907.