

Physics of the Riemann Zeros: The Low Bound for the Zeta Derivative via Quantum Field Theory

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Abstract : A product of the specific Lagrangian and the entropy factor is defined. Its positive definiteness is stated for the proper coupling constant. The passage from statistical mechanics to quantum field theory is performed by Wick rotation. The Green function (a convolution of the spectral amplitude and the propagator) is positive. Masses of quasiparticles are computed as residues. The role of the zeta derivative at zeta zeros is then highlighted, and the correspondent low bound is obtained.

Keywords : mass gap, positive definite kernels, quantum fields, Riemann zeta zeros

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