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Lee-Yang zeros in heavy-quark QCD

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We explore the distribution of the Lee-Yang zeros around the critical point that appears in the heavy-quark region of QCD at nonzero temperature in lattice numerical simulations. With the aid of the hopping-parameter expansion that is well justified around the critical point in our setting, our numerical analysis is capable of analyzing the partition function in the complex parameter plain with high accuracy. This enables precise analyses of the Lee-Yang zeros around the critical point. We study their finite-size scaling around the critical point. We also propose new methods to utilize the scaling behavior of the Lee-Yang zeros to fix the location of the critical point and edge singularity.

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