

## Universality driven analytic structure of QCD crossover

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Recent lattice QCD calculations show strong indications that the chiral crossover of QCD at zero baryon chemical potential  $\mu_B$  is a remnant of the second-order chiral phase transition. Furthermore, the non-universal parameters needed to map temperature  $T$  and  $\mu_B$  to the universal properties of the second-order chiral phase transition have been determined recently. Motivated by these observations, first, we determine the analytic structure of the partition function – the so-called Yang-Lee edge singularity – in the QCD crossover regime, solely based on universal properties. Next, utilizing the lattice QCD results for non-universal parameters we map this singularity to the real  $T$  and complex  $\mu_B$  plane, leading to the determination of the radius of convergence in  $\mu_B$  in the QCD crossover regime. These universality- and QCD-based results provide tight constraints on the range of validity of the lattice QCD calculations at  $\mu_B > 0$ . The implication of this result on the location of the conjectured QCD critical point is discussed.

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