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Searching for the QCD critical point using Lee-Yang edge singularities

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We present lattice QCD calculations of the position of Lee-Yang edge singularities in the complex chemical potential plane. The singularities have been obtained by the multi-point Pade approach on lattice QCD data of the net baryon number density at imaginary chemical potential. This approach has been used recently to extract the correct scaling of singularities near the Roberge-Weiss transition; we extend this study to the universal scaling of singularities in the vicinity of the QCD critical endpoint. Making use of an appropriate scaling ansatz, we can extrapolate the singularities towards the real axis to determine the position of the QCD critical point. We find an apparent approach toward the real axis with decreasing temperature. Current preliminary results suggest a temperature of approximately 80 MeV for the QCD critical endpoint.

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