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The Roberge-Weiss endpoint in $N_f = 2 + 1$ QCD at the physical point

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In this talk I will report on our recent results about the determination of the position and the nature of the Roberge-Weiss endpoint. Our study is performed in $N_f = 2 + 1$ QCD, with physical quark masses, making use of stout-improved staggered fermions and of the tree level Symanzik improvement for the gauge action. We study the theory at 4 different lattice spacings, corresponding to $N_t = 4, 6, 8$ and 10, and at different spatial sizes. The finite size scaling analysis performed on $N_t = 4$ and 6 lattices indicates that the Roberge-Weiss transition at the endpoint is of the 2nd order kind, in the 3D Ising universality class, while the continuum limit of the critical temperature is found to be $T_{RW} = 208(5)$ MeV.

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