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QCD with isospin chemical potential: low densities and Taylor expansion

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We investigate the phase diagram of QCD at finite isospin chemical potential using 2+1 flavours of staggered fermions with physical quark masses at different lattice spacings and volumes. In this talk we focus on the region of small isospin chemical potential below the phase boundary to the pion condensation phase and investigate the change of the transition temperature with the chemical potential. To investigate the convergence properties and the range of validity of the Taylor expansion method at a given order, we compare our results to the Taylor expansion for finite isospin chemical potential at 4 derivative order. This can serve as an important crosscheck for the Taylor expansion method at finite baryon chemical potential, where direct simulations are impossible due to the sign problem.

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