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Phase Diagram of Wilson and Twisted Mass Fermions at finite isospin chemical potential

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A finite lattice spacing may have a crucial impact on the phase diagram of QCD. The existence of the Aoki phase for Wilson fermions underlines this point. Sharpe and Wu already showed that this kind of lattice artifacts carry over to finite twisted mass. The next task is the calculation of the phase diagram at finite chemical potential. I will present the phase diagram of Wilson fermions of two-flavor QCD at finite twist as well as at finite iso-spin chemical potential. Thereby the order parameters of the new phases are pointed out and the pion masses are presented.

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