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Exploring the phase structure of 12-flavor SU(3)

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We are studying the SU(3) gauge theory with 12 staggered fermions, searching for the endpoint of the line of first-order phase transitions in the mass-beta plane. This endpoint plays an important role in our understanding of the phase diagram of this model. Having found this endpoint with high statistics on a small lattice using unimproved staggered fermions, we are working to find it on larger lattices with improved actions. For an action improved with nHYP-smeared staggered fermions, we discuss the effect of slowly turning off the improvement on the broken shift symmetry phase.

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