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Continuum limit and universality of the Columbia plot

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In its lower left corner, the Columbia plot indicates a first-order finite-temperature phase transition, which turns into a crossover as the quark masses increase. The locus of quark masses giving a second-order transition is a feature of continuum QCD, and should be recovered with any fermion discretization. However, numerical evidence has been accumulating, disfavoring universality. We explore this puzzle with 4 degenerate flavors of staggered fermions, thus avoiding any potential problem associated with rooting.

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