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Fluctuations and correlations in finite temperature QCD (15' + 5')

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We calculate fluctuations and correlations of conserved charges in finite temperature QCD up to sixth order. These are interesting for their sensitivity to criticality, for probing the relevant degrees of freedom in the QCD medium, for providing stringent tests on the hadron resonance gas model at low and resummed perturbation theory at high temperatures, and for being accessible to heavy ion collider experiments. They can also be used for the extrapolation of physical quantities to small finite chemical potentials. Our simulations use staggered quarks with physical quark masses. All of our results are extrapolated to the continuum limit.

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