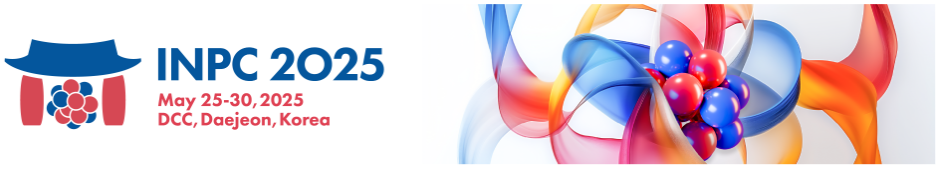

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Anatomy of critical fluctuations in hadronic matter

Monday, 26 May 2025 16:55 (15 minutes)

I discuss the fluctuations of the net-baryon number near the liquid-gas and chiral phase transitions. I use the parity doublet model to investigate the qualitative properties and systematics of the first- to fourth-order cumulants and their ratios. I show that the fluctuations of the positive-parity (e.g. protons) and negative-parity baryons do not qualitatively reflect the fluctuations of the total net-baryon number density at the phase boundaries of the liquid-gas and chiral phase transitions. I qualitatively compare the factorial cumulants for the net-proton and net-baryon number and point to the importance of the non-trivial correlations between various baryon species, in particular to the correlations between protons and neutrons as well as positive- and negative-parity baryonic chiral partners.

References:
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