ID de Contribution: **309** Type: **Talk**

Dynamics of the chiral critical point in QCD, diffusion coefficient in Model G

mardi 4 juin 2024 15:20 (20 minutes)

We present a detailed study of the finite momentum dynamics of the
$O(4)$ critical point of QCD, which lies in the dynamic universality class of Model G. The critical scaling of the model is analyzed in multiple dynamical channels. For instance, the finite momentum analysis allows us to precisely extract the pion dispersion curve below the critical point. The pion velocity is in striking agreement with the predictions relation and static universality. The pion damping rate and velocity are both consistent with the dynamical critical exponent
ζ=3/2 of Model G. Similarly, although the critical amplitude for the diffusion coefficient of the conserved O(4) charges are small; it is visible both in the restored phase and with finite explicit symmetry breaking, and its dynamical scaling is again consistent with
ζ=3/2. We determine a new set of universal dynamical critical amplitude ratios relating the diffusion coefficient to a suitably defined order parameter relaxation time. We also show that in a finite volume simulation, the chiral condensate diffuses on the coset manifold in a manner consistent with dynamical scaling and with a diffusion coefficient determined by the transport coefficients of hydrodynamic pions.

Auteurs principaux: Prof. TEANEY, Derek (Stony Brook University); GROSSI, EDUARDO (Florence University); ADRIEN, Florio (Brookhaven National Laboratory)

Orateur: GROSSI, EDUARDO (Florence University)

Classification de Session: Track4-Bulk&Phase

Classification de thématique: Bulk matter phenomena, QCD phase diagram and Critical point