

## The role of plasma screening for the location of the QCD Critical end Point

*Thursday, 14 July 2022 10:00 (30 minutes)*

I show that in a strongly interacting plasma, the fluctuations responsible for deviations from those of a description based on a simple Hadron Resonance Gas Model naturally arise from the proper inclusion of the plasma screening properties. These are encoded in the contribution of the so called "ring diagrams" and thus in the introduction of a key feature of plasmas near phase transitions, namely, long-range correlations. I illustrate this property using the Linear Sigma Model with quarks which in the high temperature and chiral symmetry approximations renders analytical results. After fixing the model parameters using input from LQCD for the crossover transition at vanishing baryon chemical potential, I study the location of the Critical End Point (CEP) in the effective QCD phase diagram. I use the model to study baryon number fluctuations and show that in heavy-ion collisions, the CEP can be located for collision energies of order of 2 GeV per nucleon, namely, in the lowest NICA or within the HADES energy domain.

### The speaker is a student or young scientist

No

### Section

1. Intermediate and high energies, heavy ion collisions

**Primary author:** AYALA, Alejandro (Instituto de Ciencias Nucleares, UNAM)

**Presenter:** AYALA, Alejandro (Instituto de Ciencias Nucleares, UNAM)

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