



Contribution ID: 447

Type: **Oral presentation**

## Lee-Yang singularities, series expansions and the critical point

*Monday 26 July 2021 21:00 (15 minutes)*

Determining the existence and the location of the QCD critical point remains a major open problem, both theoretically and experimentally. In this talk, I present a new way of reconstructing the equation of state in the vicinity of the nearest singularity (the Lee-Yang edge singularity in the crossover region) from a truncated Taylor series expansion for small  $\mu$ . This is done by using a combination of Pad\`e resummation and conformal/uniformization maps. Then, I show that this information can be used to (i) determine the location of the critical point and (ii) constrain the non-universal mapping parameters between the Ising and QCD equations of state.

I explicitly demonstrate these ideas in the 2d Gross-Neveu model whose phase diagram shares the key aspects of the conjectured QCD phase diagram including the existence of a critical point.

**Primary author:** Prof. BASAR, Gokce (University of North Carolina, Chapel Hill)

**Presenter:** Prof. BASAR, Gokce (University of North Carolina, Chapel Hill)

**Session Classification:** QCD at nonzero Temperature and Density

**Track Classification:** QCD at nonzero Temperature and Density