

East Carolina University®

Department of Physics

Colloquium

Friday, November 1, Room N109, Howell Science Complex
3:15 p.m. (Refreshments at 3:00 p.m.)

Professor Vladi Skokov
North Carolina State University

Universality Frontier: Yang-Lee Edge Singularity

Critical points are categorized based on the number of relevant variables. The standard critical point in systems like the Ising model involves two relevant variables, namely temperature and external magnetic field. In contrast, a tricritical point is characterized by four such variables. The protocritical point, widely known as the Yang-Lee edge singularity (YLE), is the simplest form of criticality and has just one relevant variable. Unlike conventional critical points, the YLE singularity occurs at complex values of parameters. When two YLE singularities merge and pinch the real axis of the corresponding thermodynamic variable, a critical point with associated critical scaling emerges. In other words, the location of the YLE singularity is continuously connected to the location of the critical point. In this talk, I explain why conventional methods fail to accurately locate YLE singularity and demonstrate the success of the Functional Renormalization Group approach in determining the universal location of these singularities.

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