Contribution ID: **83** Type: **Oral**

A solvable quantum field theory with asymptotic freedom in 3+1 dimensions

Tuesday, 5 September 2023 12:20 (20 minutes)

Wouldn't it be nice to solve large N QCD analytically? While QCD is hard, it is fairly easy to solve scalar field theories with many components, such as the O(N) model in the large N limit. Traditional wisdom has it that such theories are ill defined because they have the wrong beta function, possess a Landau pole, and are quantum trivial for N=1. In this talk, I throw out conventional wisdom, and critically re-examine scalar field theories in 4d, borrowing heavily from PT-symmetric field theory results. It's a solvable wonderland with asymptotic freedom, bound states in the infrared and a phase transition in between.

Category

Theory

Collaboration (if applicable)

Primary author: ROMATSCHKE, Paul

Presenter: ROMATSCHKE, Paul

Session Classification: New Theory

Track Classification: New theoretical developments