## THE UNIVERSITY OF HONG KONG

DEPARTMENT OF PHYSICS SEMINAR

# Conformal field theory approach to (quantum) phase transitions II

**Dr. Junchen RONG** 

CPhT Polytechnique

#### Abstract:

Following the talks I gave in 2023, I will continue the discussion of applying conformal field theory to understand the critical phase of matter. I will begin by reviewing key two-dimensional models including the critical Ising and Potts models, as well as the free compact boson model underlying the BKT phase transition—from the viewpoint of exactly solvable conformal field theories. I will then talk about scalar conformal field theories in 2+1 dimensional, focusing on their stability properties from a modern perspective. Following this, I will discuss 2 + 1 dimensional gauge theories with bosonic or fermionic matter. If time permits, I will briefly introduce developments in an exotic unmeltable order of quantum field theory.

### **Biography**:

Dr. Junchen Rong is currently a postdoc researcher at CPhT polytechnique. His research work is focused on using various aspects of conformal field theories, such as conformal bootstrap, renormalization group and perturbative methods.

## Monday, May 5, 2025, 10:00am

MWT4, 1/F, Meng Wah Complex, Main Campus, The University of Hong Kong

Department of Physics, Chong Yuet Ming Physics Building, The University of Hong Kong Phone: 28592360 Fax: 25599152. Anyone interested is welcome to attend.

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### **Biography**:

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## Wednesday, May 7, 2025, 10:00am

MWT4, 1/F, Meng Wah Complex, Main Campus, The University of Hong Kong

Department of Physics, Chong Yuet Ming Physics Building, The University of Hong Kong Phone: 28592360 Fax: 25599152. Anyone interested is welcome to attend.