



ICTS String Seminar (HYBRID)

Title : Learning more about the magic of Wilson's Renormalization Group

Speaker : Shailesh Chandrasekharan (Duke University)

Date : Thursday, 11th May 2023

Time : 03:45 pm (IST)

Abstract : It is well known that continuum quantum field theories can emerge from lattice field theories when the latter are tuned to critical points. However, this understanding has taken a somewhat magical twist in recent years, where we are able to show that free Gaussian field theories with marginally relevant couplings seem to emerge at long distances from just a few discrete lattice degrees of freedom. After quickly reviewing an older result in the $O(3)$ nonlinear sigma model which showed us this phenomenon, I will demonstrate that something similar occurs in the well-known BKT transition. Apparently, a simple loop-gas model on a square lattice with three degrees of freedom per lattice site can reproduce the massive phase of the transition automatically fine-tuned to the transition. An interesting question for the future is whether these few isolated cases we have seen are just "tips of icebergs" of a more elaborate hidden approach to other continuum quantum field theories.

Venue : **Offline:** Madhava Lecture Hall (ICTS)

Online: Please click the below link to join the seminar.

<https://icts-res-in.zoom.us/j/88092766911?pwd=R3ZrVk9yeW96Zm04ZG9KRzVhenRKZz09>

Meeting ID: 880 9276 6911

Passcode: 232322