Mathematics and CS Seminar

On the Coleman correspondence at the free fermion point

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Host: M. Beiglböck, N. Berestycki, L. Erdös, J. Maas, F. Toninelli

This talk will be about a model that illustrates that statistical mechanics and field theory can be quite special in two dimensions -- even without conformal invariance. More precisely, I will discuss a special case of a prediction of S. Coleman which identifies correlation functions of the massless sine-Gordon model (with suitably chosen parameters) and massive free fermions. This is an instance of bosonization: a (interacting) bosonic field theory is expressed in terms of a (non-interacting) fermionic model. It also demonstrates that despite being a non-trivial (and non-conformal) field theory, the sine-Gordon model at the free fermion point remains integrable (correlation functions are explicit). As a consequence we also obtain exponential decay of correlations for the massless sine-Gordon model at the free fermion point. This is joint work with Roland Bauerschmidt (Cambdridge): https://arxiv.org/pdf/2010.07096.pdf

Tuesday, November 24, 2020 04:30pm - 05:15pm
Online via Zoom

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.