



Istituto Nazionale di Fisica Nucleare

Bologna Workshop on:

CFT AND INTEGRABLE MODELS

and their applications from gauge/gravity dualities to statistical mechanics and quantum information



Contribution ID: 165

Type: **Invited talk**

Thermodynamics, transport, and fluctuations in the sine-Gordon model

Wednesday, 6 September 2023 14:30 (50 minutes)

The sine-Gordon model is a paradigmatic quantum field theory that provides the low-energy effective description of many gapped 1D systems. Despite this fact, its complete thermodynamic description in all its regimes was lacking. In the talk, I will report the filling of this gap by deriving the Thermodynamic Bethe Ansatz framework that captures the thermodynamics of the model and serves as the basis of its hydrodynamic description. As a first application, I will present results on the Drude weight characterising the ballistic transport of the topological charge and demonstrate that its dependence on the value of the coupling features a fractal structure. I will also show recent results about the large-scale fluctuations of the topological charge and current.

Based on

<https://arxiv.org/abs/2305.10495>

<https://arxiv.org/abs/2305.15474>

Primary authors: NAGY, Botond (Department of Theoretical Physics, Budapest University of Technology and Economics); TAKACS, Gabor (Department of Theoretical Physics, Budapest University of Technology and Economics); KORMOS, Márton (Department of Theoretical Physics, Budapest University of Technology and Economics)

Presenter: KORMOS, Márton (Department of Theoretical Physics, Budapest University of Technology and Economics)

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