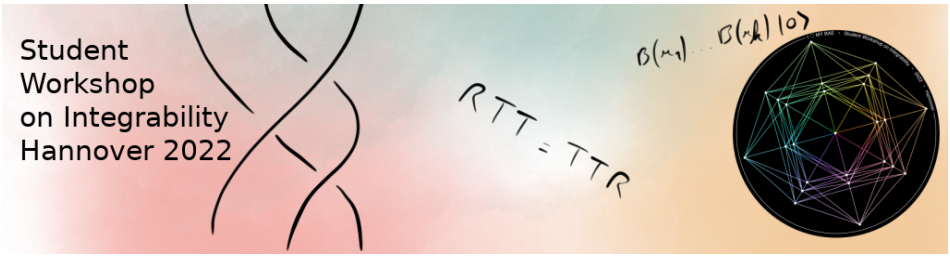

Contribution ID: **6** Type: **40 Min Talk**

Unstable Excitations in an Integrable Quantum Field Theory

Monday, 28 March 2022 14:00 (1 hour)

Scattering processes in integrable theories are traditionally associated with particle number conservation. This is indeed the case for asymptotic states, yet at intermediate time-scales decaying excitations are allowed. The family of homogeneous sine-Gordon (HSG) models provides a rare example of an integrable quantum field theory where both stable and unstable bound states are present in the spectrum.

In my talk, I will present a study of a particular member of this family, the $SU(3)_2$-HSG model, following a non-equilibrium quench. At high temperatures, physical intuition suggests that unstable particles are constantly formed and destroyed, and thus exist in finite proportions. As such, they may be expected to have a strong effect on the dynamics far from equilibrium and at finite densities. Adopting the generalized hydrodynamic approach, we identified the key signatures of unstable excitations which may serve as hallmarks for the finite-lived bound states formation. Furthermore, we explored in considerable detail quantitative and qualitative dependence of the instability signatures on the quench parameters.

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