



INVITATION

as part of the Mathematical Physics Theory Seminar

to the talk by

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on

***“Integrable quantum field theories -- inverse scattering,
braided vector spaces, and local algebras “***

Abstract:

In relativistic integrable quantum field theories on two-dimensional Minkowski space, scattering processes take a comparatively simple form because the number of particles and the sets of incoming momenta are conserved, and the whole scattering theory is encoded in a two-particle S-"matrix". This operator is constrained by various physical requirements such as Lorentz invariance, analyticity, crossing symmetry, and the Yang-Baxter equation (braid equation), and constitutes a description of the interaction that is more direct than a classical Lagrangian density.

In this talk I will review a programme for constructing such integrable QFTs starting from their two-particle S-matrix directly in the vacuum representation (inverse scattering problem). This programme makes use of tools and ideas from various fields: Starting from a two-particle S- matrix, an associated twisted Fock space (Nichols algebra/braided vector space) is constructed, which is automatically equipped with a pair of relatively wedge-local but non-local quantum fields. Using concepts from algebraic quantum field theory and Tomita-Takesaki modular theory, one can pass from these non-local fields to local observables which describe the full QFT.

Time: Tuesday, 16 December 2025, 2:00 p.m.

Location: Erwin-Schrödinger Lecture Hall, 1090 Vienna, Boltzmannngasse 5, 5th floor