Vienna School of Mathematics

PhD Colloquium

Lorenz Lichtnecker

Inverting an operator with non-trivial kernel in the context of PDEs

Abstract: We consider blow-up for the cubic Schrödinger Equation in 3D. A special type of blow-up, called self-similar blow-up, can be described by reducing the original equation to an ODE. Unfortunately, solving this ODE explicitly is very hard, if not impossible. However, we can show that such a self-similar profile exists and approximate it very accurately with rigorously proven error bounds. This process involves a linear differential operator that we would like to invert, leading to a serious obstacle, due to the non-trivial kernel of the operator. I will talk about how we can tackle this problem using a false inverse.

December 15, 2025, 15:00-16:00

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(Oskar-Morgenstern-Platz 1)