

# Oberseminar Analysis

Seminar der Abteilung für Analysis und des Lehrstuhls für Analysis und mathematische Physik

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**A new approach to Scattering:  
On the Asymptotic states of Nonlinear Dispersive and  
Hyperbolic equations with General Data**

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Abstract: I will present a new approach to finding the asymptotic states of Nonlinear Wave Equations with general initial data. In particular, we show for a large class of equations, that all asymptotic states are linear combinations of free wave, localized parts (solitons, breathers..), and a possibility of self-similar solutions as well in some cases. These results hold for initial data for which the  $H^1$  Sobolev norm (the energy norm) is uniformly bounded in time. This answers the question of Asymptotic Completeness to a large class of equations, including for the first time, equations with time-dependent potentials.

These are joint works with Baoping Liu (Peking Univ) and Xiaoxu Wu(Rutgers).