

**Mathematisches Oberseminar** *PDG und Spektraltheorie* (WiSe 2014/15).

**Date:** 22.01.2015.

**Time and place:** 14:15 in B 134.

**Speaker:** Robert Seiringer (IST Austria).

**Titel:** *Validity of spin wave theory for the quantum Heisenberg model.*

**Abstract:**

We consider the quantum ferromagnetic Heisenberg model in three dimensions, for all spins  $S \geq 1/2$ . We rigorously prove the validity of the spin-wave approximation for the excitation spectrum, at the level of the first non-trivial contribution to the free energy at low temperatures. The proof combines a bosonic representation of the model introduced by Holstein & Primakoff with probabilistic estimates, localization bounds and functional inequalities. (Joint work with Michele Correggi and Alessandro Giuliani)

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