

PDE-Lecture

**An introduction to the existence and
stability of nonlinear waves**

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This series of three lectures will cover the existence and stability of waves in nonlinear wave equations, such as the Korteweg-de Vries and nonlinear Schrödinger equation. The first lecture will focus on methods for proving the existence of such waves, especially methods that uses ideas from dynamical systems theory, sometimes known as the “spatial dynamics method”. The second lecture will focus on the method of multiple scales and the derivation of amplitude and modulation equations for waves. These equations (of which the Korteweg-de Vries and nonlinear Schrödinger equations are examples) are a sort of “normal form” for nonlinear wave equations and they arise as at least approximate equations in a host of different physical settings. The final lecture will focus on the stability of such nonlinear waves. The various types of stability that one can prove will be discussed, including the somewhat paradoxical fact that one can have asymptotic stability, in spite of the fact that many of the partial differential equations which describe these waves have a Hamiltonian structure.

Termine:

Freitag, 14. Februar 2014, 14:00 Uhr, 1C-03, Allianz-Gebäude 05.20

Montag, 17. Februar 2014, 10:00 Uhr, 1C-04, Allianz-Gebäude 05.20

Montag, 17. Februar 2014, 15:00 Uhr, 1C-04, Allianz-Gebäude 05.20

Gastgeber: Die Dozenten des Schwerpunkts Partielle Differentialgleichungen