

Karlsruher PDE-Seminar

Probabilistic well-posedness for the cubic wave equation

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When solving non linear Partial Differential Equations, very often a critical regularity threshold (measured in a scale of functional spaces, X_s), s_c appears: If the initial data are smooth enough ($u_0 \in X_s, s > s_c$), then the Cauchy problem is well posed (existence, uniqueness and continuous dependence on the data), whereas when the data are not smooth enough $u_0 \in X_s, s < s_c$, then instabilities occur. One of the simplest examples of such situation is provided by the cubic wave equation. I will start giving the basics for the Cauchy theory of this equation, and explain which type of instabilities can occur. I will finally show that if the initial data are chosen randomly, then these instabilities do not occur and the system enjoys almost sure existence, uniqueness and probabilistic continuous dependence. This is based on joint works with N. Tzvetkov.

Termin: Donnerstag, 1. Dezember 2011, 17:30 Uhr

Ort: 1C-04, Allianz-Gebäude 05.20

Gastgeber: Die Dozenten des Schwerpunkts Partielle Differentialgleichungen