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Lehrstuhl für Analysis und Modellierung

**Lehrstuhl-Seminar  
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## **Modulation Equations for SPDEs on unbounded domains**

**9. Januar 2020 - 12:45**

**Seminarraum IADM 8.526, Pfaffenwaldring 57**

Abstract: We consider the approximation via modulation equations for nonlinear stochastic partial differential equations (SPDEs) like the stochastic Swift-Hohenberg (SH) equation, which serves as a toy model for the convective instability in Rayleigh-Benard convection. Close to a bifurcation of a single mode a small band of infinitely many eigenvalues changes stability. Thus solutions of SH are well described by a modulated wave, where the amplitude solves a stochastic Ginzburg-Landau (GL) equation with space time white noise. In the one-dimensional case on the whole real line due to the weak regularity of solutions the standard deterministic methods for modulation equations fail, as we need weighted spaces that allow for unboundedness at infinity of solutions, which is natural for a translation invariant noise. Moreover, solutions of GL are only Hölder-continuous, which gives just enough regularity to obtain the approximation result.