Mathematics, Statistics, and Computer Science **@ UIC**

Applied Mathematics Seminar

Probabilistic global well-posedness of the energy-critical defocusing nonlinear wave equation on euclidean spaces

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Abstract: We consider the energy-critical defocusing nonlinear wave equation (NLW) on $\mathbb{R}^d$, $d = 3, 4, 5$. In the deterministic setting, Christ, Colliander, and Tao showed that this equation is ill-posed below the energy space H^1L^2.

In this talk, we take a probabilistic approach. More precisely, we prove almost sure global existence and uniqueness for NLW with rough random initial data below the energy space. The randomization that we use is naturally associated with the Wiener decomposition and with modulation spaces. The proof is based on a probabilistic perturbation theory and on probabilistic energy bounds.

If time allows, we will briefly discuss how the above strategy also yields a conditional almost sure global well-posedness result below the scaling critical regularity, for the defocusing cubic nonlinear Schrödinger equation on euclidean spaces. This talk is partially based on joint work with Tadahiro Oh, and on joint work with Árpád Bényi and Tadahiro Oh.

Monday, March 30 at 4:00 PM in SEO 636