

Seminar of the Work Group
Nonlinear Partial Differential Equations
WS 2020/21

November 20, 2020, 14:00 - 15:30, SR 2.066, building 20.30

Long time behavior of the filtered Schrödinger equation

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Abstract This presentation is based on the work of Sun [1]. We are interested in the influence of filtering the negative Fourier modes to the cubic defocusing Schrödinger equation. Equivalently, we want to study the effect of dispersion added to the cubic Szegő equation, leading to the NLS–Szegő equation on the circle \mathbb{S}^1

$$i\partial_t u + \epsilon^\alpha \partial_x^2 u = \Pi(|u|^2 u), \quad 0 < \epsilon < 1, \quad \alpha \geq 0.$$

There are two sets of results in this paper. The first result concerns the long time Sobolev estimates for small data. The second set of results concerns the orbital stability of plane wave solutions. Some instability results are also obtained, leading to the wave turbulence phenomenon.

Keywords : Cubic Schrödinger equation, Szegő projector, small dispersion, stability, wave turbulence, Birkhoff normal form.

References

- [1] Sun, R. *Long time behavior of the NLS-Szegő equation*, Dyn. Partial. Differ. Equ. 16 (2019), No.4, 325-357

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[†]The author is partially supported by the grant "ANAÉ" ANR-13-BS01-0010-03 of the 'Agence Nationale de la Recherche'. This research is carried out during the author's PhD studies, financed by the PhD fellowship of École Doctorale de Mathématique Hadamard.

We are inviting you to a scheduled Zoom meeting.

Topic: AG PDE Seminar: Talk by Dr. Ruoci Sun

Time: Nov 20, 2020 01:45 PM Amsterdam, Berlin, Rome, Stockholm, Vienna

Join Zoom Meeting

<https://kit-lecture.zoom.us/j/5732649920>

Meeting ID: 573 264 9920