NLS as the non relativistic limit of the Nonlinear Klein Gordon equation: uniform in time convergence of KAM solutions.

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Abstract

It is well known that solutions of the Nonlinear Klein Gordon equation

$$\frac{1}{c^2}u_{tt} - u_{xx} + c^2 u \pm u^3 = 0 \ , \quad u(0,t) = u(\pi,t) = 0$$

are well approximated in the non relatistic limit ($c \to \infty$) by solutions of the cubic Nonlinear Schrödinger equation.

In the present talk I will present a result based on KAM theory, according to which the quasiperiodic solutions of NLKG constructed thorugh KAM theory converge *uniformly for* $t \in \mathbb{R}$ to solutions of NLS.

I will start the presentation by recalling some classical results on the justification of the NLS as the classical limit of NLKG, then I will give a precise statement of the result and the main ideas of the proof.

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