

# **Global well-posedness for the non-linear Maxwell-Schrödinger system**

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In this talk I will discuss the global well-posedness and the growth of Sobolev norms for the Maxwell-Schrödinger system with an additional pure-power non-linearity. The main ingredients are suitable a priori bounds, based on smoothing-Strichartz estimates for the Schrödinger equation, combined with the analysis of a modified energy functional.

I will also discuss the existence and stability of global, finite energy, weak solutions to a quantum hydrodynamic system, which is connected to the non-linear Maxwell-Schrödinger system by means of the Madelung transform.