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Self-similar blow-up profiles for slightly supercritical nonlinear Schrödinger equations

We construct radially symmetric self-similar blow-up profiles for the mass supercritical nonlinear Schrödinger equation with nonlinear exponent close to the mass critical case and for any space dimension. These profiles bifurcate from the ground state solitary wave. In this talk, we present the argument which relies on the matched asymptotics method and we derive an exponentially smallness condition on the Sobolev critical exponent as conjectured by Sulem and Sulem in 1997.

This is a joint work with Yvan Martel and Pierre Raphaël.