

A new decomposition for the Schrödinger equation in the semiclassical asymptotics and an associated AP numerical scheme

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This is a joint work with Ch. Besse and R. Carles.

We propose a new decomposition “à la Grenier” for linear and nonlinear Schrödinger equations, which leads to a locally well-posed problem, independently of the semiclassical parameter. Based on this formulation, we give a numerical scheme which is Asymptotic Preserving in the semiclassical limit (before caustics). The performances of this method will be compared with the ones of the standard splitting method.