学术报告

Semi-classical Schrodinger equations in the electromagnetic field: approximations and numerical methods

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Abstract： In this talk, we consider the Schrodinger equation in the presence of the classical electromagnetic fields in the semi-classical regime, where the wave function propagates $O(\varepsilon)$ oscillations in space and time. For direct numerical simulations, we present the time splitting spectral method where the semi-Lagrangian method is applied to treat the additional convection term introduced by the vector potential. Next, several asymptotic methods are discussed, where the Hagedorn wave packets approach is highlighted since it improves the approximation order uniformly in ε. At last, we introduce the Gaussian wave packet transform to the Schrodinger equation with vector potentials, which is an equivalent reformulation of the highly oscillatory wave equation, and naturally facilitates multiscale numerical simulations.

欢迎大家参加！