

数学与系统科学研究院

计算数学所学术报告

报告人: Prof. Hailiang Liu

(Iowa State University)

报告题目: Recovery of High
Frequency Wave Fields

邀请人: 周爱辉研究员

报告时间: 2009年7月30日(周四)

上午 10:00—11:00

报告地点: 科技综合楼三层 301

计算数学所报告厅

Abstract: Computation of high

frequency solutions to wave equations is

important in many applications, and notoriously

difficult in resolving wave oscillations. Gaussian

beams are asymptotically valid high frequency solutions concentrated on a single curve through the physical domain, and superposition of Gaussian beams provides a powerful tool to generate more general high frequency solutions to PDEs. An alternative way to compute Gaussian beam components such as phase, amplitude and Hessian of the phase, is to capture them in phase space by solving Liouville type equations on uniform grids.

In this talk I shall present a systematic construction of asymptotic high frequency wave fields from computations in phase space for acoustic wave equations (also for the Schrödinger equation). The k -th order Gaussian beam superposition is shown to converge to the original wave field in the energy norm, at an optimal rate in arbitrary spatial dimension.

欢迎大家参加！