



# 北京理工大学

## 数学与统计学院学术报告

### The non-relativistic limit of Klein-Gordon equations in curved spacetimes

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**地 点:** 文萃楼 E609

**摘 要:** We will discuss a second-microlocal framework for multi-scale analysis that gives the non-relativistic limit (as the speed of light tends to infinity) of Klein-Gordon equations in curved spacetimes. Here, 'microlocal' stands for localization in the location and the frequency, and the 'second microlocalization' stands for a further refined localization in phase spaces.

I will discuss how we implement this idea, and how to use this, in combination with the Fredholm machinery to derive the fact that solutions to the Klein-Gordon equation, after suitable modulation, degenerates to solutions to the Schrodinger equation when the speed of light tends to infinity. The main novelty of this work is that we can obtain both the microlocal convergence and the global in spacetime convergence in curved spacetimes; in addition, we are able to encode the particle and the anti-particle solutions simultaneously in a very natural manner. (This is based on a joint work with Andrew Hassell, Ethan Sussman and András Vasy.)