Gravitational Physics
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I N V I T A T I O N

as part of the Gravitational Physics Literature Seminar

to the online talk by

Alexander WATSON

(University of Minnesota)

on

“ Wave-packet dynamics in locally periodic media“

Abstract:

By considering the dynamics of spectrally concentrated wave-packets propagating in media with a slowly-varying periodic structure, we rigorously derive a novel dynamical system for the evolution of observables associated to the wave, specifically its center of mass and momentum. The system corrects the standard result relating wave-packet velocity to the derivative of the dispersion band. The corrections include an anomalous velocity due to Berry curvature and an interesting "particle-field coupling" effect where the evolution of the observables, which are discrete degrees of freedom, becomes coupled to the evolution of the wave-packet envelope, a continuous degree of freedom. Although our derivation focuses on the case of waves described by the linear Schrödinger equation, we expect that the derivation can be carried out for other linear PDE describing waves.

Time: Wednesday, 6 November 2024, 3:00 p.m.

Zoom Meeting:

https://univienna.zoom.us/j/3177749239?pwd=bGkrS0pJRDA4Mm5ZU1lseXBmUXE2QT09

sgd.: P. Chrusciel, D. Fajman