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 talk by

Filip FICEK

(University of Vienna)

on

"Time-periodic solutions to the 1D cubic wave equation"

Abstract:
Time-periodic solutions to nonlinear dispersive equations have been the subject of many investigations over the years. The classic works prove the existence of small amplitude solutions with frequencies belonging to nowhere dense sets.

In this talk I will show numerical evidence suggesting existence of a completely new class of solutions for one-dimensional cubic wave equation on an interval with Dirichlet boundary conditions. Solutions belonging to it are characterised by large energies, have complicated mode compositions, and form intricate fractal-like patterns. Then I will show how these numerical results can be used to rigorously construct exact solutions belonging to this new class. Finally, I will demonstrate a systematic approach to analysing complex structures formed by these solutions.

This is a joint work with Maciej Maliborski.

Time: **Wednesday, 18 June 2025, 2:15 p.m.**

Location: **Seminarraum A, Währinger Straße 17, 1090 Vienna, 2nd floor**

sgd.: D. Fajman