Contribution ID: **9** Type: **not specified**

Integrability of a charged rigid body in a constant electromagnetic field

Monday 6 July 2026 16:55 (25 minutes)

We study the dynamics of a charged rigid body with stationary charge distribution in external constant electric and magnetic fields. The total charge of the body vanishes and the charge distribution is described by symmetric matrix of the 'electrostatic inertia' of the body. The equations of motion are derived and it is shown that they are Hamiltonian with respect to a certain degenerated Poisson structure. Integrability of this system is analysed using Kovalevskaya method, the Ziglin theorem concerning the splitting of separatrices and the differential Galois theory. The non-integrability theorems under general assumptions and some integrable cases are presented.

Work in collaboration with Andrzej J. Maciejewski

Presenter: PRZYBYLSKA, Maria (Institute of Physics, University of Zielona Góra)