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Integrable systems:

from Poisson to Nijenhuis

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The goal of this mini-course is to introduce students to the basics of Nijenhuis geometry, drawing parallels with Poisson geometry (Lectures 1 and 2). These two fields are remarkably similar in many ways. It is no surprise that they are excellent partners in so-called Poisson-Nijenhuis structures, which play a crucial role in the theory of integrable Hamiltonian systems. Lectures 3 and 4 are devoted to this topic, leading finally to a solution to the classical Eisenhart-Stäckel problem on integrable systems with integrals quadratic in momenta.