

An invitation to Poisson Geometry

Marius Crainic
Utrecht University
m.crainic@uu.nl

Poisson structures originate in the work of Lagrange and Poisson on the motion of planets in the solar system; the process of understanding them was long and it prompted the discovery of several fundamental concepts in mathematics, such as: Jacobi identity, Maurer-Cartan equations, etc. Poisson Geometry (the geometric study of Poisson structures) can be traced back to the work of Lie and Kirilov; the first systematic studies are found in the work of Lichnerowicz in the 1970s and Weinstein in the 1980s. Its remarkable development over the last few decades was driven by several problems (such as integrability or Conn's linearization theorem) and led to surprising new connections with various other fields. All these led to the present-day understanding of Poisson Geometry: it is an amalgam of Lie Theory, Symplectic Geometry and Foliation Theory, offering the framework for exciting interactions between these theories, as well as others. In the talk I will try to expand this abstract.