

Symplectic Geometry (M16)

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This course aims to provide an introduction to Symplectic Geometry. Topics expected to be covered include:

- Symplectic linear algebra. Symplectic manifolds and symplectomorphisms. Cotangent bundles, Lagrangian submanifolds, Hamilton's equations.
- Moser's trick, Darboux and Weinstein neighbourhood theorems.
- Contact manifolds, Reeb vector fields and geodesic flows.

Prerequisites

Some familiarity with manifolds and differential forms as in the Part III Differential Geometry course.

Literature

1. V.I. Arnold, *Mathematical methods of classical mechanics*, Graduate Texts in Mathematics, 60. Springer-Verlag, New York, 1989.
2. A. Cannas da Silva, *Lectures on symplectic geometry*, Springer-Verlag, 2001.
3. D. McDuff and D. Salamon, *Introduction to symplectic topology*, 3rd edition. Oxford University Press, 2017.

Additional support

Three examples sheets will be provided and three associated examples classes will be given. There will be a one-hour revision class in the Easter Term.