



*Institute of Mathematical Research  
Department of Mathematics*

## Lectures on Topics in Geometry\*

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We begin with symplectic vector spaces, Lagrangian subspaces and the Maslov index. We then introduce the concepts of symplectic manifolds, Lagrangian and coisotropic submanifolds, Hamiltonian vector fields and the Poisson bracket, with examples relevant to classical mechanics, complex geometry and representation theory, followed by Hamiltonian group actions, moment maps and symplectic quotients. Finally, we study localization and Yang-Mills theory over Riemann surfaces.

*References:*

1. M. Audin, Torus actions on symplectic manifolds, Birkhauser, 1991.
2. V.I. Arnold, Mathematical methods in classical mechanics (2nd ed), Springer, 2010.
3. A.C. da Silva, Lectures on symplectic geometry, Springer, 2008.
4. A. Weinstein, Lectures on symplectic manifolds, Amer Math Soc, 1977.

<b>Date / Time:</b>	Wednesdays, September 19 - December 5, 2012, 11:00am - 1:45pm
<b>Place:</b>	Room 210, Run Run Shaw Bldg., HKU

*\*Lectures of a graduate course MATH6201 Topics in Geometry of the joint  
HKU-CUHK-HKUST Centre for Advanced Study (Mathematics)*

*All are welcome*