Integrable systems, Floer theory, and the minimal model program
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Outline

(1) Symplectic geometry and Hamiltonian displaceability: Symplectic manifolds, Hamiltonian flows, Lagrangian submanifolds, Hamiltonian displaceability. References: Ana Canas da Silva [13], Abraham-Marsden [12], Guillemin-Sternberg [19], McDuff-Salamon [22]
(2) Variation of symplectic quotient: Symplectic quotients, symplectic cutting, construction of toric completely integrable systems, polygon spaces, flips. References: Marsden-Weinstein [21], Guillemin-Sternberg [18], Lerman [20], Delzant [16], Y. Nohara, K. Ueda [23].
(3) Lagrangian Floer theory: Morse complex. Pseudoholomorphic curves. Floer complex. Invariance under Hamiltonian isotopy. References: McDuff-Salamon [22], Oh [24], Cho-Oh [15], Charest-Woodward [14]
(4) Computations in Lagrangian Floer theory: Floer theory of circles in the two-sphere. Floer theory of Lagrangian tori in completely integrable systems. Floer theory of Lagrangians associated to flips. References: Fukaya-Oh-Ohta-Ono [17] and notes by the speaker.

References

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[2] Ana Cannas da Silva. *Introduction to symplectic and Hamiltonian geometry*. Publicações Matemáticas do IMPA. [IMPA Mathematical Publications]. Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro, 2003.
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[6] Kenji Fukaya, Yong-Geun Oh, Hiroshi Ohta, and Kaoru Ono. Lagrangian Floer theory on compact toric manifolds. I. *Duke Math. J.*, 151(1):23–174, 2010.
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