Videolinks

Integrable Hamiltonian Systems

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Academic year 2020/21

- **All videos are recorded with Full HD 1080p.
  (More precisely: 1920 × 1080p and 30fps).**

- **If YouTube does not start a video automatically with HD 1080p
  then simply adjust the resolution manually.**

- **All videos are 'unlisted' in YouTube, i.e. you can only find them
  via the direct link and neither with the Youtube search function
  nor listed as upload in the underlying channel.**

22 Sept 2020 — Hoorcollege 01

(on campus)

22 Sept 2020 — Hoorcollege 02

(on campus)

29 Sept 2020 — Hoorcollege 03

(on campus)

6 Okt 2020 — Hoorcollege 04

(on campus)

13 Okt 2020 — Hoorcollege 05

(on campus)

20 Okt 2020 — Hoorcollege 06

(on campus)

27 Okt 2020 — Hoorcollege 07

- Part 1: *Proof of Arnold-Liouville: Motivation and Intuition.*
  https://youtu.be/GmbTra6Ic04

- Part 2: *Proof of Arnold-Liouville: Extending over fundamental domain...*
  https://youtu.be/qT6L2KdFezc

- Part 3: *Proof of Arnold-Liouville: Period shift in coordinates*
  https://youtu.be/L41Xq57fZZY

- Part 4: *Proof of Arnold-Liouville: Periods of the lattices*
  https://youtu.be/Y714zbijsbQ

- Part 5: *Proof of Arnold-Liouville: Extending to $\mathbb{R}^n$*
  https://youtu.be/I0NeyGTzWO8

- Part 6: *Proof of Arnold-Liouville: Putting everything together...*
  https://youtu.be/nEGriTIOk8o

3 Nov 2020 — Hoorcollege 08

- Part 1: *Genericity of regular and singular points.*
  https://youtu.be/dZ54VcvZOmU

- Part 2: *Nondegenerate singular points.*
  https://youtu.be/qISXLoUY-jc

- Part 3: *Local normal form for nondegenerate singular points.*
  https://youtu.be/AnD-sQ8szLQ

- Part 4: *Examples of singular fibers and points (elliptic-elliptic, elliptic-regular, and focus-focus*
  https://youtu.be/S_3-NEVAJsE

10 Nov 2020 — Hoorcollege 09

- Part 1: *Group actions – notions and conventions.*
  https://youtu.be/dTEXLKO2z6Y

- Part 2: *Three examples of Hamiltonian torus actions.*
  https://youtu.be/W-x60Ohy9yo

- Part 3: *Convexity theorem and Delzant's classification of effective torus actions.*
  https://youtu.be/7k2xOFN4s_Y

17 Nov 2020 — Hoorcollege 10

- Part 1: *Notions and conventions for general Lie group actions.*
  https://youtu.be/3i5xBFf9uSI

- Part 2: *Examples for Lie groups and Lie algebras: $U(n)$, $\mathfrak{u}(n)$ and $\mathbb{R}^n$, $Lie(\mathbb{R}^n)$.*
  https://youtu.be/DpBF7ydd2-U

- Part 3: *Infinitesimal generator, adjoint and coadjoint action.*
  https://youtu.be/28KjCUrbw24

- Part 4: *Hamiltonian Lie group actions.*
  https://youtu.be/lGrp4faL6oQ

- Part 5: *The Marsden-Weinstein quotient (symplectic reduction).*
  https://youtu.be/AZbzn_7gfmA

24 Nov 2020 — Hoorcollege 11

- Part 1: *Step 1 and 2 in Delzant's reconstructions of toric systems.*
  https://youtu.be/YH5e2UKOVq8

- Part 2: *Step 3 in Delzant's reconstructions of toric systems.*
  https://youtu.be/XhY_SQi4gFk

- Part 3: *Step 4 in Delzant's reconstructions of toric systems.*
  https://youtu.be/Sk1HGnLU-Rg

- Part 4: *Step 5 in Delzant's reconstructions of toric systems.*
  https://youtu.be/dgTA5ROXklM

- Part 5: *Step 6 in Delzant's reconstructions of toric systems.*
  https://youtu.be/N_9kjj6_FwA

1 Dec 2020 — Hoorcollege 12

- Part 1: *Delzant polytopes and action angle coordinates.*
  https://youtu.be/1EkRp59f6Qs

- Part 2: *Monodromy/ Dehn twist near focus-focus fibers.*
  https://youtu.be/H--r3bk-2w8

- Part 3: *Definition and properties of semitoric systems.*
  https://youtu.be/maZrKj0cohU

- Part 4: *Examples and classification of semitoric systems.*
  https://youtu.be/9Qof-yWeGho

8 Dec 2020 — Hoorcollege 13

- Part 1: *Criteria for types of singular points.*
  https://youtu.be/rIfLd23f4zQ

- Part 2: *Example with hyperbolic singular components.*
  https://youtu.be/OKqXcsdQtoU

- Part 3: *Example with elliptic-hyperbolic and hyperbolic-regular singularities.*
  https://youtu.be/NB-phPC7FpY

- Part 4: *The image of the momentum map of the example.*
  https://youtu.be/YIpqTb9NP84