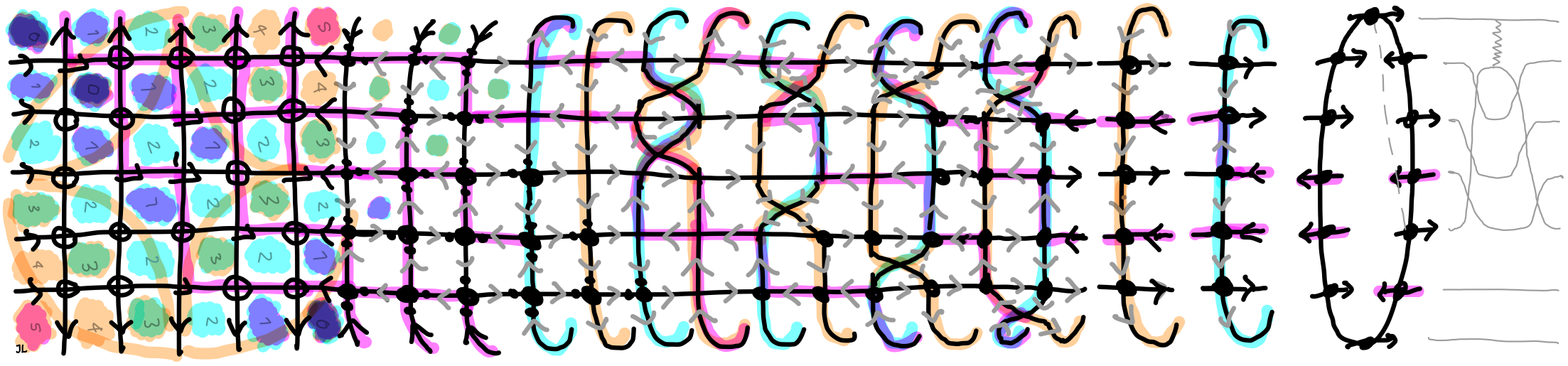
Institut de Physique Théorique

Theoretical physics courses



Introduction to quantum integrability

Jules Lamers (IPhT)

Fri 8th, Tue 12nd, Fri 15th, Wed 20th, Tue 26th of September 2023, from 10:00 to 12:30.
In person at IPhT and online.

This course will give a pedagogical introduction to (quantum) integrability, a topic in mathematical physics with applications ranging from experiments in condensed-matter physics to high-energy theory. The aim is to show some highlights of the field, with a glimpse of the underlying algebraic structures, while keeping technicalities to a minimum.

The provisional plan of the course is as follows; details can be adjusted to suit the audience.

Part I will cover the (standard) basics of integrability, more or less following my lecture notes arXiv:1501.06805:

- the Heisenberg spin chain,
- the six-vertex model,
- the exact characterisation of their spectrum by Bethe ansatz,
- an application to alternating-sign matrices (ASM).

Part II is about the (less standard) basics of long-range integrability:

- the Haldane–Shastry spin chain,
- the quantum Calogero–Sutherland system,
- the exact and explicit characterisation of their spectrum.

To receive the latest news on this course and the video-conference links, please subscribe to its newsletter, as explained at the website `courses.ipht.fr`. An open, non-interactive livestream will also be available at `youtube.com/ipht-tv`.

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