

Ph.D. course : Quantum Machine Learning in the Phase Space

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Duration 20h (3CFU)

Scheduled at February or March 2022

Goals

- 1) introduction to phase space methods in quantum optics
- 2) introduction to quantum machine learning

Program

- 1) Methods in the phase space, characteristic function
- 2) Gaussian states and their transformations
- 3) Neural network representation of Gaussian states
- 4) Training of quantum machine learning models
- 5) Examples
 - Entanglement
 - Gaussian Boson sampling
 - Neural networks variational ansatz for quantum many-body

Exam (two options)

- 1) Colloquium on theoretical aspects
- 2) Coding examples

References

Barnett and Radmore, Methods in Theoretical Quantum Optics

ArXiv:2110.12379

ArXiv:2102.12142

