

Quantum machine learning: state of the art and perspectives

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Machine learning permeates our everyday life, with applications ranging from disease diagnosis and environmental monitoring to fraud detection. Despite its successes, modern machine learning still faces major challenges, including the need for extensive computational resources, large training datasets, and a high number of trainable parameters. In recent years, an exciting avenue to overcome these limitations has emerged: implementing machine learning algorithms on quantum computers.

This talk will explore the key achievements reached so far and highlight ongoing research within our department. Special attention will be given to a particular class of quantum machine learning models—Equivariant Quantum Neural Networks—designed to exploit symmetries in data to achieve improved performance.

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