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Quantum machine learning in particle physics

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Particle physics has seen a surge of interest in understanding the impact of quantum computers on the field. From allowing one to more naturally simulate quantum fields to providing aid in the most computationally expensive pieces of analysis, proposals to find useful quantum advantage abound.

While quantum hardware and algorithms are currently still in their early stages, rapid progress is being made. This exploratory phase will pave the way for new ideas and techniques needed to fully exploit future large quantum computers.

Along with other emerging quantum technologies like sensing and networks, the whole world, and particle physics with it, can enter a completely new era.

In this talk I will give a gentle and high-level introduction to quantum computing for particle physics with a focus on quantum machine learning. I will also highlight some of the contributions from my group in this evolving field.

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Session Classification: Analysis and Reconstruction Methods

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