



量子物理学・ナノサイエンス第 172 回セミナー

## Reinforcement Learning Using Quantum Boltzmann Machines

- 講師** : Dr. Pooya Ronagh  
1QBit, Canada
- 日程** : 1 月 27 日 (金) 10:00-
- 場所** : 本館 2 階 H284B 物理学系輪講室

### 概要

The Boltzmann distribution of the energy function of a Boltzmann machine can be used to design machine learning algorithms. In this talk, instead of a classical energy function, we will associate a transverse field Ising spin Hamiltonian with significant transverse field to the Boltzmann machine and propose a reinforcement learning algorithm based on this graphical model. We will discuss numerical methods of approximating the partition function and expected values of the spins in the model, and show that this richer Boltzmann machine can improve the convergence of the algorithm to an optimal policy for an autonomous agent seeking optimal control in its ambient environment.

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