

NITheCS Webinar  
Friday, 21 January 2022, 14h00 – 15h00  
Mo Kordzanganeh (University of Manchester)

**“Quantum Machine Learning for Radio Astronomy”**



**ABSTRACT**

In this work we introduce a novel approach to the pulsar classification problem in time-domain radio astronomy using a Born machine, often referred to as a quantum neural network. Using a single-qubit architecture, we show that the pulsar classification problem maps well to the Bloch sphere and that comparable accuracies to more classical machine learning approaches are achievable. We introduce a novel single-qubit encoding for the pulsar data used in this work and show that this performs comparably to a multi-qubit QAOA encoding.

**BIOGRAPHY**

I am a Master of Physics graduate from the University of Manchester, and I researched quantum machine learning in my Master's project.

In this project, I tried to explore the effects of data encoding on the expressivity and capacity of quantum neural networks, specifically as compared with their classical counterparts.

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