



Canadian Association  
of Physicists

Association canadienne  
des physiciens et physiciennes

Contribution ID: 688

Type: **Invited Speaker / Conférencier(ère) invité(e)**

## **(I) Training quantum computers the same way as neural networks**

*Tuesday, 8 June 2021 14:00 (30 minutes)*

Despite an undeserved reputation for being hard to understand, the mathematics behind quantum computing is based on relatively straightforward linear algebra. This means that the equations governing quantum computing are intrinsically differentiable. This simple observation has remarkable consequences. In particular, many of the tools developed over the past decades for deep learning, such as gradient-based training algorithms, can be applied to quantum computers with little modification. In this talk, I will overview how these ideas can be explored using freely available open-source software and publicly accessible quantum computing platforms, enabling the discovery and optimization of new and interesting quantum computing algorithms.

**Primary author:** KILLORAN, Nathan

**Presenter:** KILLORAN, Nathan

**Session Classification:** TS-2 Quantum Machine Learning (DTP) / Apprentissage automatique quantique (DPT)

**Track Classification:** Symposia Day (DTP) - Quantum Machine Learning