Centro de Ciencias de Benasque, week of June 22-26 2020

TensorNetwork Workshop presented by:
X, The Moonshot Factory (Formerly Google X)

Tensor networks have emerged over the last two decades as a powerful tool to describe strongly entangled quantum many-body systems. Current applications go well beyond the study of collective phenomena in condensed matter and include, among others, conjectured discrete realizations of the holographic principle in quantum gravity, full interaction configuration computations in quantum chemistry, and convolutional neural networks in machine learning.

In these workshops we will introduce *TensorNetwork* (https://github.com/google/TensorNetwork), a new open-source library for tensor network manipulations that are designed for accessibility but also powerful enough for state-of-the-art computations. At the front end, you can even just draw the tensor network of interest with our Graphical User Interface (GUI), which will translate your drawing into *TensorNetwork* code. That very same code can then be executed using a range of hardware platforms, from a laptop to multi-core desktop workstations or accelerators such as GPUs and TPUs.

This workshop is organized in two afternoon sessions, each lasting around 3 hours. No previous practical experience in tensor networks is required. Mark your calendar! **Registration** is free and will be organized closer to the date. You will:

- Learn the basics of tensor network algorithms.
- Get introduced to our easy-to-use open-source *TensorNetwork* library using Python, with NumPy, JAX, TensorFlow, and PyTorch backends.
- Need to bring a laptop (nothing to install in advance - all examples will use Google Colab)
- Leave excited and ready to use tensor networks for your own applications!

We look forward to seeing you in Benasque!

Guifre Vidal, senior research scientist at X, the Moonshot Factory