



## Physical Sciences Seminar

# Quantum networks - around the globe and in the brain?

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Host: Shabir Barzanjeh

I will talk about the potential for quantum networks in two very different contexts, starting with the technological quest to realize a global quantum network. The first quantum communication satellite was recently launched in China. It is a low-earth orbit satellite carrying a source of entangled photon pairs. I will describe a proposal how such satellites could be used as part of a quantum network architecture to create entanglement over global distances, and our work on the components required for such networks. I will then turn to the brain. It is well established that neurons can emit photons. For these photons to be able to serve as signals between neurons, they would need to travel in waveguides. We showed, based on detailed theoretical modeling, that myelinated axons could serve as photonic waveguides, and we proposed experimental tests. Our results also raise the question whether photons could mediate quantum entanglement in the brain.

**Friday, July 7, 2017 11:00am - 01:00pm**

Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

Please find a schedule of the ISTA Shuttle on our webpage:

<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.