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Signatures of non-local transport in hybrid and superconducting junctions

I will present recent results targeting two different three-terminal junctions: the Cooper pair splitter formed between a superconductor and two normal metals, and the three-terminal Josephson junction formed between three superconductors. In the Cooper pair splitter, I will show that the statistics of waiting times between single electron jumps reveals the signature of non-local transport. In the Josephson junction, I will show an overview of the deep consequences of non-local transport processes involving multiple Cooper pairs. In equilibrium, I will discuss the possibility to close the proximity gap for certain superconducting phases. Under commensurate voltage bias, I will discuss the presence of non-dissipative non-local superconducting current.

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