Quantum quasi-steady states in current transport[1] ROBERTO D'AGOSTA, University of California - San Diego, MICHAEL ZWOLAK, California Institute of Technology, MASSIMILIANO DI VENTRA, University of California - San Diego — We investigate quasi-steady state solutions to transport in quantum systems by finding states which at some time minimize the change in density throughout all space and have a given current density flowing from one part of the system to another [1]. Contrary to classical dynamics, in a quantum mechanical system there are many states with a given energy and particle number which satisfy this minimization criterion. Taking as an example spinless fermions on a one-dimensional lattice, we explicitly show the phase space of a class of quasi-steady states. We also discuss the possibility of coherent and incoherent mixing of these steady state solutions leading to a new type of noise in quantum transport. [1] M. Di Ventra and T.N. Todorov J. Phys. Cond. Matt. **16**, 8025 (2004).

Roberto D'Agosta
University of California - San Diego