

****Title:**** Quantum Flicker Noise in Atomic and Molecular Junctions

****Abstract:**** Noise, rather than a nuisance for signal detection, can serve as an additional probe for uncovering underlying effects. I will describe our recent work on electronic current noise in atomic-scale junctions. Our studies, which were done as a collaboration with experimentalists, demonstrate that fundamental information on quantum transport is conveyed in the electronic current noise including the delta-T noise, anomalous shot noise, and flicker noise. Focusing on the recently-discovered quantum flicker noise, I will describe, from the theory side, our efforts to model and characterize it. Particularly, I will present our derived expression for the flicker noise in atomic junctions, and illustrate how it can unravel the number of quantum conduction channels and their contribution to the total conduction.

O. Shein-Lumbroso, J. Liu,* A. Shastry,* D. Segal, and O. Tal, Quantum flicker noise in atomic and molecular junctions, Phys. Rev. Lett. 128, 237701 (2022).

* equal contribution