1116-81-2770 **Theodore D Drivas*** (`tdrivas2@jhu.edu`) and **Gregory L Eyink**. *Quantum Spontaneous Stochasticity.*

In fluid turbulence, non-uniqueness due to "roughness" of the advecting velocity field in the zero viscosity limit is believed to lead to stochastic motion of classical particles or "classical spontaneous stochasticity". Analogies between stochastic particle motion in turbulence and quantum evolution suggest that there should be "quantum spontaneous stochasticity" (QSS) for particles in rough potentials. For a repulsive cusp potential $V(x) \sim C|x|^{1+\alpha}$, A. Athanassoulis and T. Paul recently showed that the Wigner function for the quantum particle converges in the classical limit $\hbar \to 0$ to a non-trivial probability measure, so that indeterminacy persists. This result assumes, however, an exact power-law potential down to below the Planck length and well below the scale at which non-relativistic Schroedinger breaks down. To address this issue, we show QSS occurs for 1D models of a particle in a repulsive cusp potential mollified at scale ℓ for an initial Gaussian wave-packet centered at 0 and obtain an estimate of the time (depending on ℓ) it takes to see the effects of the classical indeterminacy. We also show that QSS occurs in the scattering of a wave-packet off the rough potential, though the initial conditions must be well prepared. (Received September 22, 2015)