1162-35-213 **Juraj Foldes*** (foldes@virginia.edu) and **Mouhamadou Sy**. *Invariant measures for Hamiltonian systems.*

Using a fluctuation dissipation method, we construct an invariant measure for the surface quasi-geostrophic equation (SQG) and 3D Euler equation. Since the support of the measure contains entire solutions, we obtain a manifold containing solutions that do not blow-up. This complements results in which a blow-up solutions for SQG and grow up solutions for Euler are constructed. The method of the proof relies on an addition of a stochastic forcing and a small dissipation to the equation. For such stochastic equation, one can construct an invariant measure and by passing the strength of the forcing and the dissipation to zero, we obtain the desired invariant measure. We also discuss the size of the support of the measure, which relies on the number of conservation laws for the particular equation.

This is a joint project with Mouhamadou Sy. (Received August 31, 2020)