1145-35-608 **Kristin M. Kurianski*** (kmdett@mit.edu) and **Gigliola Staffilani** (gigliola@math.mit.edu).

Smoothing effect for solutions to the Dysthe equation. Preliminary report.

The surface behavior of an incompressible, inviscid, irrotational fluid can be described in two dimensions by the Dysthe equation. This equation is derived through a multiple scale expansion in the deep water, small slope regime of the kinematic boundary condition at the surface carried out to the 4th order. Recently, it has been used to model extraordinarily large waves occurring on the ocean's surface called rogue waves. In this talk, we will give a brief derivation of the Dysthe equation along with some theoretical results. We consider an initial profile bounded in L^2 norm and prove a smoothing effect in which we are able to bound uniformly in space the L^2 norm in time of a fractional derivative of the linear solution by the L^2 norm in space of the initial data. This is the Kato smoothing effect. (Received September 11, 2018)