1172-76-304   **Anastassiya Semenova***, ICERM at Brown, Providence, RI 02903, **Alexander O Korotkevich**, Department of Math & Stat, **Pavel M Lushnikov**, Department of Math & Stat, and **Sergey A Dyachenko**, Department of Mathematics. *Superharmonic Instability of the Stokes Waves.*

The classical problem of water waves on the surface of an ideal fluid in 2D is considered. We provide new insight into the stability of the Stokes waves by identifying previously inaccessible branches of instability.

We provide numerical evidence that pairs of unstable eigenvalues of linearized dynamical equations appear as a result of collision of pairs of neutrally stable eigenvalues at extrema of the Hamiltonian. Moreover, we find that eigenvalues of the linearized problem that become unstable follow a self–similar law as they approach the instability threshold, and a power law is suggested for unstable eigenvalues in the immediate vicinity of the limiting wave. (Received August 30, 2021)