

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Onset of wind-wave generation on a viscous liquid ANNA PAQUIER, MARC RABAUD, FREDERIC MOISY, Laboratory FAST, Orsay, France — In a new experimental set-up, we investigate the onset of wave generation over a viscous liquid. We access the spatio-temporal structure of the surface deformations using Free Surface Synthetic Schlieren. Above a critical wind speed, surface deformations organize themselves into quasi-monochromatic transverse waves, with amplitude increasing spatially in the downstream direction. This spatial growth is found to be exponential with the fetch (distance along the tank) at small fetch. The spatial growth rate increases linearly with wind speed, from which the onset for wind generation can be determined accurately. At higher wind velocity or fetch, nonlinear effects are observed, resulting in an increase of the wavelength and phase velocity, and to more disordered wave patterns.

Frederic Moisy
Laboratory FAST

Date submitted: 23 Jul 2015

Electronic form version 1.4