1132-76-93 **Shu-Ming Sun*** (sun@math.vt.edu), Department of Mathematics, Virginia Tech, Blacksburg, VA 24061. *Exact theory of multi-hump waves on water of finite depth with small surface tension.*

The talk concerns the existence of multi-hump surface waves with small oscillations at infinity on a layer of fluid with finite depth using the exact governing equations (also called Euler equations). The fluid is assumed to be incompressible and inviscid with a constant density (one common example is water) and the flow is irrotational. The surface wave is propagating with a constant speed on the free surface under gravity and small surface tension. If the wave speed is near its critical value, it has been shown that the Euler equations have solitary-wave solutions of elevation with small oscillations at infinity, known as generalized solitary waves. In this talk, it will be discussed that under such conditions, the Euler equations will have two-hump solutions (i.e., two-solitary-wave solutions) of elevation with small oscillations at infinity. The amplitude of the oscillations is algebraically small comparing with the inverse of the wave-length for the part of single-solitary wave. The basic idea to prove such existence is to patch two appropriate generalized solitary-wave solutions together using some free parameters. The similar idea works for the existence of multi-hump solutions. (This is a joint work with S. Deng). (Received July 15, 2017)