1134-46-307 **Bruce K. Driver**, **Brian C. Hall** and **Todd Kemp*** (tkemp@math.ucsd.edu). *The Free Segal-Bargmann Transform, Invariant Brownian Motions, and Back Again.*

The Segal-Bargmann Transform is a unitary isomorphism between the Heisenberg and Fock representations in quantum mechanics, which generalizes to any compact type Lie group. It has a large-N limit over unitary groups $\mathrm{U}(N)$ which is related to free unitary Brownian motion, and more exotic SDEs.

In this talk, I will describe joint work with Driver and Hall, and the work of my student Ching Wei Ho, understanding these large-N limits from different perspectives. I will also describe their connection to unitarily-invariant Brownian motions, and how a characterization of those led to a new form of the Segal-Bargmann transform with a complex time parameter. (Received September 10, 2017)