1086-60-836 **Natasha Blitvić*** (natasha.blitvic@vanderbilt.edu), Department of Mathematics, 1326 Stevenson Center, Vanderbilt University, Nashville, TN 37240. *The (q,t)-Gaussian Process.*

Fock spaces, used in quantum mechanics to represent collections of quantum states with a variable number of particles, are a natural setting for non-commutative probability. In addition to the bosonic and fermionic Fock spaces of classical and quantum probability, notable examples include the full Boltzmann Fock space (Voiculescu's free probability) and the q-Fock space (q-deformed probability of Bożejko and Speicher). This talk describes a new type of Fock space, namely the (q,t)-*Fock space*, that generalizes the aforementioned constructions and gives rise to a rich two-parameter family of non-commutative probability spaces. We will particularly focus on the properties and the role of the (q,t)-*Gaussian measure*, the orthogonalizing measure of the deformed Hermite orthogonal polynomial sequence

$$xH_n(x) = H_{n+1}(x) + [n]_{q,t}\, H_{n-1}(x),$$

with $H_0(x) = 1$, $H_1(x) = x$, and $[n]_{q,t} = (t^n - q^n)/(t-q)$. We will also discuss the combinatorics underlying the (q,t)-Fock space construction and the probabilistic significance of the $q = 0$ specialization, which gives rise to the generalized Rogers-Ramanujan continued fraction, the quantum Airy function of Ismail, and the deformed Catalan numbers of Carlitz and Riordan. (Received September 16, 2012)