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**Natasha Blitvic\*** (nblitvic@indiana.edu). *Analysis in Non-tracial Non-commutative Probability Spaces.*

The setting for this talk is *non-tracial probability spaces*, that is, non commutative probability spaces of the form  $(\mathcal{A}, \mathbb{E})$  where the expectation functional  $\mathbb{E}$  does not satisfy  $\mathbb{E}(a_1 a_2) = \mathbb{E}(a_2 a_1)$  for all pairs of non-commutative random variables  $a_1, a_2 \in \mathcal{A}$ . We will address the extent to which the lack of traciality impedes the probabilistic analysis of such spaces. We focus on the concrete examples of the  $q$ -Gaussian and  $(q, t)$ -Gaussian probability spaces (the former tracial, the latter non-tracial) and discuss explicit combinatorial constructions that will allow us to partially circumvent the non-traciality in the latter case. Examples of such constructions include the generalized Wick products, which will have applications to stochastic calculus and Segal-Bargmann analysis. (Received September 17, 2013)