1116-47-826 **Benjamin Peter Russo*** (russo5@ufl.edu). *Sub-Jordan Operator Tuples.*
An operator T is called a *3-isometry* if there exists a $B_1(T^*, T)$ and $B_2(T^*, T)$ such that

$$Q_T(n) = T^{*n}T^n = I + nB_1(T^*, T) + n^2B_2(T^*, T)$$

for all natural numbers n. A related class of operators, called *3-symmetric* operators, have a similar definition. These operators have a connections with Sturm-Liouville theory and are natural generalizations of isometries and self-adjoint operators. We call an operator J a *Jordan* operator of order 2 if $J = A + N$, where A is either unitary or self-adjoint, N is nilpotent order 2, and A and N commute. As shown in the work of Agler, Ball and Helton, and joint work with McCullough, 3-symmetric and 3-isometric operators can be modeled as Sub-Jordan operators. In this talk we discuss the extension of these theorems to the multi-variable case in relation to a conjecture of Ball and Helton. More specifically, we cover connections between the lifting theorems via spectral theory and the necessity of an extra condition unique to the multi-variable case. (Received September 13, 2015)