Georgia Analysis Symposium: Saturday's Talks

**Brett Wick** (GA Tech)

*Composition of Haar Paraproducts*

We give necessary and sufficient conditions that characterize when the composition of certain types of Haar paraproducts are bounded.

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**Mishko Mitkovski** (Clemson)

*On the determinacy problem for measures*

A finite positive measure $\mu$ is said to be $a$-determinate if there is no other finite positive measure $\nu$ such that the Fourier transforms of $\mu$ and $\nu$ agree on some interval of length $a$. For a given measure $\mu$, we show how to estimate the largest $a$ for which $\mu$ is $a$-determinate by looking only at the support of $\mu$. Our approach is partly based on the de Branges-Naimark extreme point method. We use the same method to improve the important result of Eremenko and Novikov concerning oscillations of measures with a spectral gap. This is joint work with A. Poltoratski.

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**Yuliya Babenko** (Kennesaw State)

*Kolmogorov's Problem on the Class of Multiply Monotone Functions*

In this talk we give necessary and sufficient conditions for the system of positive numbers $M_{\{k_1\}}, M_{\{k_2\}}, ..., M_{\{k_{d}\}}$, $0 \leq k_1 < ... < k_d$, to guarantee the existence of an $r$-monotone function defined on a half line that has these numbers as values of uniform norms of its corresponding derivatives.

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**Alex Stokolos** (Georgia Southern)

*The power and weakness of trigonometric sums*

Some applications of trigonometric sums in nonlinear discrete dynamics will be considered.
Alex Iosevich (Rochester)

Intersections of sets and Fourier analysis

A celebrated series of results due to Mattila, Falconer, Kahane and others say that “generically” the dimension of $A \cap (x-gB), \forall A, B \subset \mathbb{R}^d, x \in \mathbb{R}^d, g \in O(d)$ is $dim(A) + dim(B) - d$. We shall use harmonic analytic methods to study the exceptional sets of translates, replace the Hausdorff dimension of the intersection by its upper Minkowski dimension and extend the translation and rotation group to a more general family of transformations. We shall also study an inverse problem, reminiscent of the Furstenberg problem for Kakeya type sets, where we impose a condition on the dimension of the intersection of a given set and a family of manifolds and deduce a lower bound for the set itself.