



College of Science and Mathematics
Department of Mathematics

FALL 2015 MATH SEMINAR

**Title: *On Generalized Paley-Wiener Theorems
for a Scalar Type Spectral Operator***

Speaker: *Marat Markin, Ph.D. (CSU Fresno)*

Time & Location: *October 16, 2015 @ 10:00 AM in PB 192*

Abstract:

Known descriptions of the *Carleman classes of vectors* of a *normal operator* in a complex Hilbert space in terms of its spectral measure are extended to the case of a *scalar type spectral operator* in a complex Banach space.

The results can be considered to be operator analogues of the classical *Paley-Wiener Theorems* relating the smoothness of the *Fourier transform* $\hat{f}(\cdot)$ of a square-integrable on the real axis function $f(\cdot)$ to its decay at $\pm\infty$, which precisely corresponds to the case of the *self-adjoint* differential operator $A = i\frac{d}{dx}$ in $L_2(\mathbb{R})$ with the domain $D(A) = W_2^1(\mathbb{R}) := \{f \in L_2(\mathbb{R}) \mid f(\cdot) \text{ is absolutely continuous on } \mathbb{R} \text{ and } f' \in L_2(\mathbb{R})\}$.

An immediate implication of the obtained description for the *entire vectors of exponential type* is their *denseness* in the space.