## WEAK DIFFERENTIAL SUBORDINATION OF MARTINGALES AND ITS APPLICATIONS IN HARMONIC ANALYSIS

## IVAN YAROSLAVTSEV

Differential subordination of real-valued martingales together with the basic properties was discovered by Burkholder in 1984. In this talk we will discuss weak differential subordination of martingales, which is a generalization of differential subordination to the infinite dimensional setting, and provide extension of the corresponding  $L^p$  estimates for vector-valued martingales. Also we will show more general estimates for weakly differentially subordinated martingales under the orthogonality assumption.

As a corollary we extend the results of Bañuelos and Bogdan (2007) and Bañuelos, Bielaszewski, and Bogdan (2011) on sharp estimates for the norms of a broad class of even Fourier multipliers (including e.g. second order Riesz transforms) to infinite dimensions, and provide new estimates for the norm of the Hilbert transform acting on general Banach space-valued functions.

The talk is partly based on joint work with Adam Osekowski (University of Warsaw).