Sampling and interpolating sequences in de Branges spaces

Jan-Fredrik Olsen

Abstract

The de Branges spaces are spaces of entire functions with a weighted norm on the real line, given by the modulus of some Hermite-Biehler function. These spaces can be seen as a generalization of the classical Paley-Wiener spaces. It has recently been proved by Belov, Mengestie and Seip that when the derivative of the phase of the corresponding HB function behaves "erratic enough", some results which hold in the Paley-Wiener case are no longer true. On the other hand, when the phase has a derivative which is equivalent to a constant, the de Branges spaces behave almost like in the classical case, as was shown by Lyubarskii and Seip. In this talk we will introduce de Branges spaces with a phase that is in some sense "in between": The derivative of the phase gives a doubling measure on the real line. We will discuss several of the classical questions regarding sampling and interpolation in such spaces, including characterization in terms of Beurling densities, Bernstein inequalities, peak functions, Bessel sequences and Carleson measures. This is a joint work with J. Marzo (NTNU) and S. Nitzan (NTNU).