Interpolation in de Branges-Rovnyak spaces

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Branges-Rovnyak spaces play a prominent role in Hilbert space approaches to H^∞-interpolation, but a systematic study of interpolation for functions in a Branges-Rovnyak space is missing. In this talk we consider a general form of Nevanlinna-Pick interpolation for such functions. As Branges-Rovnyak spaces are Hilbert spaces, the solution set has, as one may expect, the form of the sum of a unique minimal norm solution and the solution to a metric constrained homogeneous interpolation problem. However, to obtain an explicit description of the solutions, requires a study of Redheffer transformations that come up in the description of a related Nevanlinna-Pick interpolation problem for H^∞-functions. This study leads to some observations on Redheffer transformations that parallel results on transfer-function realizations. The talk is based on joint work with J.A. Ball and V. Bolotnikov.