Interpolating sequences for pairs of spaces

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Abstract:

A sequence $\{z_n\}$ in the unit disc is called an interpolating sequence if, given any bounded sequence $\{w_n\}$, one can always find a bounded analytic function f such that $f(z_n) = w_n$ for every $n \geq 1$. Carleson (1958) proved that $\{z_n\}$ is interpolating if and only if it is separated in the pseudohyperbolic metric and generates a Carleson measure. In 2017, Aleman, Hartz, McCarthy, and Richter extended this characterization to multiplier algebras of spaces with the complete Pick property. Examples of such spaces include the classical Hardy space, weighted Dirichlet spaces on the disc and certain Besov-Sobolev spaces on the unit ball.

In this talk, we will focus on interpolating sequences for multipliers between spaces $\mathcal{H}_k$ and $\mathcal{H}_\ell$ where the reproducing kernel of $\mathcal{H}_k$ is a complete Pick factor of that of $\mathcal{H}_\ell$. In particular, we will see that, after appropriately modifying the separation condition, Carleson's theorem holds true in this more general setting. We will also show that our modified separation condition is, in a sense, sharp, thereby answering a question of Aleman, Hartz, McCarthy, and Richter.