**Summer School 2026**

Topics in Banach Space Theory

# Bourgain-Rosenthal-Schechtman spaces in rearrangement-invariant and Hardy spaces

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| **Name** | Thomas Speckhofer |
| **University** | York University |
| **Day and time** | Thursday: 16:05–16:30 |

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## Abstract

In 1981, Bourgain, Rosenthal, and Schechtman constructed uncountably many pairwise non-isomorphic complemented subspaces of $L^p$ for $1 < p < \infty$, $p \neq 2$. We extend their construction to rearrangement-invariant function spaces and Hardy spaces. For any separable rearrangement-invariant space $X$ with non-trivial Boyd indices, we show that these subspaces are complemented and establish the following dichotomy: Either one can extract an uncountable family of pairwise non-isomorphic subspaces, or they are all isomorphic to $X$. To this end, we introduce an ordinal index that detects whether $X$ embeds complementably into an arbitrary separable Banach space. Moreover, we give examples of spaces close to $L^1$ and $H^1$ where these subspaces fail to be complemented.

Based on joint work with Konstantinos Konstantos and Pavlos Motakis.