Operator Theory and Analytic Function Spaces

Vectorial Hankel operators composed with differentiation, and notions of $BMOA$

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A remarkable feature of the space BMO is its multitude of equivalent descriptions, for example in terms of Carleson measures, boundedness of Hankel operators, or as the dual of $H^1_{\mathbb{R}}$. The theory of scalar valued BMO has proved to be notoriously difficult to generalize to the setting of Hilbert space operator valued functions. This talk is inspired by the fact that $BMOA_{\mathcal{NP}}$, the space of analytic symbols giving rise to bounded Hankel operators on $H^2(\mathcal{H})$, is yet to be characterized in terms of an oscillation type condition. We consider the composition of vectorial Hankel operators with a derivative of positive fractional order, and characterize boundedness in terms of a Carleson embedding type condition. As a corollary we obtain that the corresponding Carleson embedding does not characterize $BMOA_{\mathcal{NP}}$.