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Factorization of the identity in SL^∞ and mixed-norm Hardy spaces

Given a Banach space X with an unconditional basis, we consider the following question: does the identity on X factor through every bounded operator on X with large diagonal relative to the unconditional basis? We show that on Gowers' unconditional Banach space, there exists an operator for which the answer to the question is negative. By contrast, for the concrete spaces SL^∞ with the one-parameter Haar system and mixed-norm Hardy spaces $H^p(H^q)$ with the bi-parameter Haar system, this problem always has a positive solution. The talk is based on https://arxiv.org/abs/1509.03141, https://arxiv.org/abs/1610.01506 and https://arxiv.org/abs/1611.00622.