Recent developments on equivalence after extension and Schur coupling

Abstract

Two Banach space operators $U : X_1 \to X_2$ and $V : Y_1 \to Y_2$ are said to be (a) equivalent after extension if there exist Banach spaces $X_0$ and $Y_0$ such that $U \oplus I_{X_0}$ and $V \oplus I_{Y_0}$ are equivalent and (b) Schur coupled in case there exists an operator matrix $[A \ B; C \ D] : [X_1, Y_1] \to [X_2, Y_2]$ with $A$ and $D$ invertible and

$$U = A - BD^{-1}C, \quad V = D - CA^{-1}B.$$ 

In the 1990s Bart and Tsekanovskii [1, 2] studied the relation between these two notions, and the notion of matricial coupling which coincides with equivalence after extension, and proved that Schur coupling implies equivalence after extension. The converse question, whether equivalence after extension implies Schur coupling, was answered affirmatively only for rather special classes of operators, until recently [4, 5, 3]. In this talk we discuss some of these recent developments.

References


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