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*Operator theoretic tools for harmonic analysis and PDE*

In this talk I present some known tools and methods from operator theory for questions arising in vector-valued harmonic analysis and PDE. These are in particular useful for problems involving rough coefficients and domains where the usual methods from harmonic analysis may not directly apply. In connection with these methods we ask for possible generalizations which lead to natural and easy to formulate open problems involving classical operator theoretic notions such as positivity and present recent partial results. I will show that some of these questions are closely related to classical open problems in operator theory.