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On directions and operators

Fundamental operators arising in Euclidean harmonic analysis are often associated with sets of directions. What are these operators? Why are they important? How do direction sets enter the picture and influence their behaviour? The central issues underpinning these questions are rooted in analysis and geometry, but recently tools from extremal combinatorics and algebraic geometry have also played an important role in their study. This talk will provide a brief history of this genre of problems, compare and contrast a few such operators and discuss some modern approaches for their treatment.