

**Theme 1: harmonic**

**Bounds for a planar Pierce—Yung operator**

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I will discuss a class of polynomial Carleson operators of radon-type introduced by Pierce—Yung. These operators incorporate aspects of the theory of radon transforms (averages over curves and surfaces) and polynomial Carleson operators (maximally modulated Hilbert transforms). I will present some recent work which establishes the first  $L_p$  bounds for an operator of this form in the setting of the Euclidean plane. The arguments incorporate an array of techniques, in particular decoupling theory and oscillatory integral estimates which rely on the polynomial method.

Joint with David Beltran and Shaoming Guo