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Sobolev estimates for multilinear Radon transforms via partition optimization

Multilinear generalized Radon transforms and oscillatory integral operators occur in many settings. I will describe a method for obtaining Sobolev space bounds for such multilinear operators by optimizing over a collection of linear estimates. This approach was motivated by problems in geometric measure theory/combinatorics, and I will give examples of these applications, but this technique might be applicable for other problems involving multilinear operators, such as in scattering theory and inverse problems. This is joint work with Alex Iosevich and Krystal Taylor.