Matrix weights: On the way to the linear bound

Abstract

In recent years, the attempts to prove sharp bounds for Calderon-Zygmund operators on weighted $L^p$ spaces in terms of the $A_p$-characteristic of the weight has been an important driving force in Harmonic Analysis. After the work of many authors, this culminated with the proof of the conjectured linear bound for $p = 2$ for all Calderon-Zygmund operators by Tuomas Hytönen in 2010.

Recently, the question of the validity of the linear bound for all Calderon-Zygmund operators in the matrix-weighted setting has attracted some interest. In the talk, I want to present the reduction of this question to the case of Haar multipliers and dyadic paraproducts. I also want to talk about the remaining obstacles, some of which have recently been resolved, and focus on the matrix techniques being used.

This is joint work with Andrei Stoica.