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Norm-variation of smooth bilinear averages and several applications

We introduce smooth two-dimensional bilinear averages and establish a bound for their variation in the L^2 norm. Our primary application of this estimate is a quantitative result on the convergence of double ergodic averages with respect to two commuting transformations. This is joint work with Polona Durcik, Luka Rimanić, Kristina Ana Škreb, and Christoph Thiele.