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**Ronald R Coifman\*** ([coifman@math.yale.edu](mailto:coifman@math.yale.edu)), Dept of Mathematics Yale, 10 Hillhouse Ave,  
New Haven, CT 06520. *Harmonic Analysis Tensor wavelets and smoothness of Database.*

We show that given a matrix or database can be equipped with two geometries in duality , one on the rows the other on the columns so as to to minimize appropriate Besov norms of the matrix. This method is applied to provide fast numerical analysis , as well as to organize text documents. Relations to duality for smoothness class and Earth mover distances are essential . joint work with M Gavish, and A Haddad. (Received August 26, 2013)