Some new characterizations of Sobolev spaces

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Abstract: This talk is on some new characterizations of Sobolev spaces which are based on non-local functionals whose roots are from definition of the fractional Sobolev spaces. New types of the Poincare inequality, the Sobolev inequality, and the Reillich Kondrachov compactness theorem will also be discussed. Possible applications for image processing will be mentioned. This is partially joint with Bourgain and Brezis.