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Marcinkiewicz meets Gagliardo and Sobolev: weak-type formulas for norms of the gradient

I will present new results characterising Sobolev norms of functions with Marcinkiewicz weak-type estimates for the integrand of the Gagliardo semi-norm and their application to detection of constant functions and repairing the fractional Gagliardo–Nirenberg interpolation at endpoints where it fails.

This is a joint work with Haim Brezis (Rutgers, Technion Haifa and Sorbonne) and Po Lam Yung (Chinese University of Hong Kong and Australian National University).