Fractional div-curl quantities and applications to nonlocal geometric equations

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The talk is based on the joint work with Armin Schikorra

We investigate a fractional notion of gradient and divergence operator. We generalize the div-curl estimate by Coifman-Lions-Meyer-Semmes to fractional div-curl quantities. We demonstrate how these quantities appear naturally in nonlocal geometric equations, which can be used to obtain a regularity theory for fractional harmonic maps and critical systems with nonlocal antisymmetric potential.