The uncharted territory of $W^{\alpha,1}$ Sobolev spaces

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I will address properties of the fractional Sobolev space $W^{\alpha,1}(\mathbb{R}^N)$ which cannot be answered by classical representation formulas from Harmonic Analysis, for any exponent $\alpha > 0$. They can be handled instead in terms of a strong capacitary inequality which is based itself on a new geometric boxing inequality that connects the Hausdorff content of dimension $N - \alpha$ and the fractional perimeter of order $0 < \alpha < 1$. These results have been obtained in collaboration with D. Spector (National Taiwan Normal University).