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A Spline Frame Characterization for Sobolev Spaces.

In this talk, we will discuss Battle-Lemarié spline wavelets and their recent success in characterizing spaces measuring smoothness. In particular, we will see how a classical theorem giving the Sobolev norm for a certain smoothness range through spline coefficients can be extended to a larger range by oversampling against our spline, i.e. by using a frame. In this process, we will highlight a remarkable connection between B-splines and the measurement of smoothness. We will also touch on how the results extend to the more complicated Besov and Triebel-Lizorkin spaces.