1012-41-123 **Shidong Li***, Department of Mathematics, San Francisco State University, San Francisco, CA 94132. *Compactly Supported Smooth Duals for B-spline Riesz Sequences of Translates: a simple formula and the calculus.* Preliminary report.

A B-spline Riesz sequence of translates has, in conventional frame and basis notions, a unique biorthogonal dual without having the compact support. Nevertheless, constructions of compactly supported (unconventional) biorthogonal duals exist for at least a decade. These duals exist outside of the B-spline subspace. One simple way to characterize these duals is through the notion of pseudoframes for subspaces (PFFS). PFFS is a notion of frame-like expansions for a subspace $\mathcal{X}$ in a separable Hilbert space. None of the pair of sequences $\{x_n\}$ and $\{x_n^*\}$ in a PFFS is necessarily contained in $\mathcal{X}$, which gives rise to additional flexibilities beyond frames. When applied to shift-invariant subspaces, PFFS dual sequences still posses the translation structure, and specific dual function formula can be derived. This becomes much more advantageous if PFFS duals of B-spline Riesz sequences are the subject of study. A simple and exceedingly convenient formula can be derived for the construction of biorthogonal (PFFS) duals with almost arbitrary support and smoothness. We shall demonstrate that this formula reduces the pseudoframe dual construction to painless calculus problems through a parametric function. Examples will be presented. (Received September 15, 2005)