

1098-46-321

David R. Larson*, Department of Mathematics, Texas A&M University, College Station, TX 77843-3368, and **Sam Scholze**, Department of Mathematics, Texas A&M University, College Station, TX 77843-3368. *Spectral bridging of omissions in frame theory*. Preliminary report.

Let $\{f_j\}$ be a Parseval frame for a Hilbert space H , or more generally $\{f_j, g_j\}$ be a dual pair of frames. Let f be a vector in H , and let Λ be a subset of the index set. If f is analysed with $\{g_j\}$ and if the frame coefficients for Λ are erased or omitted, then by bridging the omissions we mean replacing the omitted coefficients with appropriate weighted averages of the other non-omitted coefficients. By spectral bridging we mean bridging in such a way that the resulting error operator has significantly reduced spectral radius. We show that in many (in fact most) cases bridging can be done to make the error operator nilpotent, so the spectral radius is zero, using a bridge set of indices no greater than the cardinality of the omission set. In fact, the error operator can be made nilpotent of index 2, which really surprised us, leading to a new method of perfect reconstruction from frame omissions in finitely many computational steps, and to improved partial reconstruction when perfect reconstruction is not the goal. (Received January 28, 2014)