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**Nikolaos Dimitrios Atreas\*** ([natreas@csd.auth.gr](mailto:natreas@csd.auth.gr)), Thessaloniki, Greece. *Non-uniform sampling expansions and local reconstruction on subspaces of  $L_2(\mathbb{R})$ .*

Given a regular function whose Fourier transform has no real zeros and a set of measurements  $L_n(f)$  on a  $\delta$ -separated sampling set ( $\delta > 0$ ), we determine a closed subspace of  $L_2(\mathbb{R})$  whose elements are uniquely reconstructed by means of the set  $L_n(f)$ . We show that the corresponding non-uniform average sampling reconstruction formula for functions in this space exhibits local properties and we present a local reconstruction formula suitable for practical applications. (Received September 21, 2009)