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Hamid Behmard (behmarh@wou.edu), Mathematics Department, Western Oregon University, Monmouth, OR 97361, **Adel Faridani*** (faridani@math.orst.edu), Department of Mathematics, Oregon State University, Corvallis, OR 97331, and **David Walnut** (dwalnut@gmu.edu), Dept. of Mathematical Sciences, George Mason University, Fairfax, VA 22030-4444. *Construction of Sampling Theorems for Unions of Shifted Lattices.*

The classical sampling theorem permits reconstruction of a bandlimited function f from its values on a lattice. This work considers sampling sets which are unions of possibly different shifted lattices. Its approach is based on finding suitable decompositions $K = K_0 \cup K_1$ of the bandregion K of f . Two such decompositions are presented, subject to K satisfying certain compatibility conditions. It is demonstrated how the decompositions can be used to construct sampling theorems or recursive reconstruction algorithms, and a numerical implementation in two dimensions is presented. (Received September 22, 2005)