1009-37-224   **E. Arthur Robinson*** (`robinson@gwu.edu`), Department of Mathematics, George Washington University, Washington, DC 10052. *On the spectrum of model sets.*

A model set is a special type of almost periodic uniformly discrete and relatively dense subset of a locally compact abelian group G. Model sets are popular as models for quasicrystals. Examples of model sets in $G = \mathbf{Z}$ include the Sturmian and Toeplitz sequences, and in general model sets are related to almost automorphic dynamical systems. We show, modulo an algebraic hypotheses, that for any countable dense subgroup Σ of the dual $\widehat{G}$, there is a model set $\Lambda \subset G$ with spectrum Σ. This a "Halmos-von Nuemann Theorem" for model sets. (Received August 18, 2005)