1047-03-64   **Henry P Wynn***, London School of Economics, Houghton Street, London, WC2A 2AE,
                    England. *Self-avoiding generating sequences for Fourier lattice designs.*

This continues work by Riccomagno, Schwabe and Wynn (Ann. of Statist., 1997) and other papers on d-dimensional Fourier regression. Good designs, that is set of sampling points, for multidimensional regression are based on integer lattices whose positive integer generators $\{g_1, \ldots, g_d\}$ have special self-avoiding properties. These properties lead to generalisations of the Nyquist sampling theorem in that to realise solutions to these properties the sample size must exceed a minimal value, which we may call the generalised Nyquist value. The self-avoiding property can be converted to a statement about the existence of integer vectors $g = (g_1, \ldots, g_d)^T$ which do *not* satisfy a special set of linear equation $A_d g = 0$. It transpires that some "greedy" solutions are derived from certain sequences of intrinsic interest such as Sidon sets, the Thue-Morse sequence and constructions based on Cantor sets. Minimal solutions can be found using methods from computational algebraic geometry. (Received January 11, 2009)