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Mark Stankus* (mstankus@calpoly.edu), 1 Grand Avenue, Department of Mathematics, San Luis Obispo, CA 93407. *n-symmetric Linear Transformations and von Neumann algebras*. Preliminary report.

Helton generalized the concept of self-adjoint map to that of an n -symmetric operator for natural numbers n . A bounded linear transformation T of a complex Hilbert space is called n -symmetric if $\sum_{k=0}^n (-1)^k \binom{n}{k} (T^*)^{n-k} T^k = 0$. When classifying solutions to this equation, it suffices to consider solutions T where the smallest von Neumann algebra containing T is a factor. We show that if T is an n -symmetric operator and the smallest von Neumann algebra containing T is a factor, then the set of eigenvalues of T^* is an interval in the real line. A combination of Rosenblum's Theorem, resolvent inequalities and the existence of maximal invariant subspaces is used. The techniques apply to a large class of hereditary roots. No knowledge of von Neumann algebras is required. (Received September 22, 2009)