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Steven Klee* (klee@math.ucdavis.edu), Department of Mathematics, 1 Shields Ave, University of California, Davis, CA 95616, and **Isabella Novik**. *Centrally symmetric manifolds with few vertices*. Preliminary report.

A simplicial complex Δ is *centrally symmetric* if it admits a free involution. For each positive integer d and each integer $0 \leq i \leq d - 1$, we construct a simplicial manifold, $\mathcal{B}(i, d)$, that can be realized as a full-dimensional subcomplex of the boundary complex of a d -dimensional cross-polytope. The complex $\mathcal{B}(i, d)$ satisfies $\tilde{H}_i(\mathcal{B}(i, d); \mathbb{Z}) = \mathbb{Z}$ and $\tilde{H}_j(\mathcal{B}(i, d); \mathbb{Z}) = 0$ for $j \neq i$. Moreover, the boundary complex of $\mathcal{B}(i, d)$ is a centrally-symmetric triangulation of $\mathbb{S}^i \times \mathbb{S}^{d-i-2}$ with only $2d$ vertices. Existence of such a triangulation for the case of $i = d - i - 2$ was conjectured by Sparla. (Received January 19, 2011)