1176-57-27 **Joshua M Drouin*** (jdrouin@ksu.edu), 1020 Quivera Cir, APT 1, Manhattan, KS 66502.

Homotopy Groups of Embedding Spaces.

We study the difference between the homotopy groups of spaces of smooth embeddings and spaces topological embeddings of a sphere into four-manifolds. In particular, we show that:

$$\ker\left[\pi_k(\mathbf{Emb}_S^{C^\infty}(S^2,X)) \to \pi_k(\mathbf{Emb}^{\mathrm{TOP}}(S^2,X))\right]$$

may have an arbitrarily high-rank summand for a some 4-manifolds. Here, $\mathbf{Emb}_S^{C^\infty}(S^2,X))$ represents the component to the embedding space containing a specific embedding S. This behavior is found for spheres of arbitrary self-intersection. (Received January 03, 2022)