1145-54-2895 **Shelley B Kandola*** (kando004@umn.edu). *The Topological Complexity of Finite Models of Spheres.*

The topological complexity (TC) of a connected space X can be thought of as the minimal number of continuous motion planning rules required to instruct a robot to move from one position in X to another position. A common introductory example is a robot whose range of motion is S^1, e.g., a rotating security camera. In this case, $\mathrm{TC}(S^1) = 2$. The TC of spheres has been studied in depth by Farber (products of spheres) and González (subcomplexes of products of spheres). In 2018, Tanaka introduced Combinatorial Complexity (CC) as an analog of TC for finite spaces. In that paper, the author proves that the definitions of CC and TC coincide on finite spaces, and that the TC of a minimal finite model of S^1 has TC equal to 4. In this talk, I explore the TC of non minimal finite models of spheres. First, I prove a more general theorem that $\mathrm{TC}(X') \leq \mathrm{TC}(X)$, where X' is the barycentric subdivision of a finite space X. Lastly, I give an explicit construction of the Lusternik-Schnirelmann category of non-minimal finite models of S^1. (Received September 25, 2018)