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The symmetric products of the circle

By $X(n)$ we denote the space of non-empty finite subsets of X with at most n elements endowed with the Hausdorff metric and call the n -fold *symmetric product* of X . This was introduced by Borsul-Ulam (Bull. A. M. S. 37(1931)).

In this talk we shall describe the symmetric product $\mathbb{S}^1(n)$ as a compactification of an open cone over ΣD^{n-2} . Then we shall determine the homotopy type of $\mathbb{S}^1(n)$ and detect several topological properties of $\mathbb{S}^1(n)$. As its consequence we determine the homotopy type of $\mathbb{S}^1(n)$ and give an alternative proof of Borsuk-Bott theorem “ $\mathbb{S}^1(3) = \mathbb{S}^3$ ”.

*This is a joint work with Naotsugu Chinen