

1154-55-1670 **Michael A. Hill*** (mahill@ksu.edu). *Abe Homotopy Groups*.

In condensed matter physics and elementary particle physics there are certain singularities called topological excitations that can be classified using homotopy groups. Sometimes these singularities can interact, requiring stronger invariants known as Abe homotopy groups.

After looking at the connection between homotopy groups and Abe homotopy groups, we will discuss how looking at equivalence classes of Abe homotopy up to an action of conjugation by the elements of the fundamental group gives useful information about models for physical systems. (Received September 16, 2019)