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*Quasi-adiabatic stability of Fermi surfaces and K-theory*

I will present a classification of Fermi surfaces of non-interacting, discrete translation-invariant systems from electronic band theory, quasi-adiabatic evolution and their topological interpretations. For systems on a half-space and with a gapped bulk, this derivation naturally yields a  $K$ -theory classification. Given the  $d - 1$ -dimensional surface Brillouin zone  $X_s$  of a  $d$ -dimensional half-space, this result implies that different classes of globally stable Fermi surfaces belong in  $K^{-1}(X_s)$ . I will also mention how to include symmetries through equivariant methods. This is based on joint work with A.Adem, O.Antolín-Camarena and G.W. Semenoff.