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Crossed Products by Automorphisms of $C(X, D)$

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We consider crossed products of the form $C^*(\mathbb{Z}, C(X, D), \alpha)$ in which D is simple, X is compact metrizable, α induces a minimal homeomorphism $h: X \rightarrow X$, and a mild technical assumption holds. In a number of examples inaccessible via methods based on finite Rokhlin dimension, either because D is not \mathcal{Z} -stable or because X is infinite dimensional, we prove structural properties of the crossed product, such as (tracial) \mathcal{Z} -stability, stable rank one, real rank zero, and pure infiniteness.

The method is to find a centrally large subalgebra of the crossed product which is a direct limit of “recursive subhomogeneous algebras over D ”. With a better understanding of such direct limits, many more examples would become accessible.

This is joint work with Dawn Archey and Julian Buck.