Title: Existence and uniqueness theorems for circle actions on Kirchberg algebras

Abstract: We classify circle actions with the Rokhlin property on Kirchberg algebras in terms of their equivariant K-theory (uniqueness), and determine exactly what $\mathbb{R}(S^1)$-modules arise as the equivariant K-theory of such actions (existence). Along the way, we develop some of the deeper theory of circle actions with the Rokhlin property that lead to classification: representation of circle actions with the Rokhlin property as dual actions, isomorphism $K_0(A) \cong K_1(A)$ and preservation of classifiable classes, among others. As a consequence of the classification results, we show that the Rokhlin property implies the continuous Rokhlin property on Kirchberg algebras (in clear contrast to the finite group case, in which they are known to be different even on Kirchberg algebras).