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Exotic Crossed Products by Group Actions on C*-algebras

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Crossed products by actions of groups on C*-algebras play a very important role in the fields of Operator Algebras and Noncommutative Geometry. Classically, there are two crossed-product constructions which have been used in the literature: the universal (or maximal) crossed product and the reduced (or minimal/spatial) crossed product. But very recently there has been a growing interest in crossed-product functors which lie between the maximal and the reduced one. One reason is that they allow a reformulation of the Baum-Connes conjecture on the K-theory of crossed products which avoids the existing counter examples of the conjecture. In this series of lectures we shall present various constructions of exotic crossed product functors and we study important properties of these functors. We also show that for many groups there exist infinitely many different crossed-product functors with good functorial properties. This series of lectures is based on some joint work with Alcides Buss and Rufus Willett.