Recollements and algebraic K-theory I, II

This is a series of two talks. We shall discuss the additivity of algebraic K-groups of rings in the framework of recollements of derived module categories, and apply representation-theoretic methods to establish reduction formulas for calculation of higher K-groups of rings. This is a joint work with Changchang Xi.

In the first part, we shall discuss higher algebraic K-theory of ring epimorphisms. Given a homological ring epimorphism from a ring to another ring, we provide a sufficient condition to guarantee that the algebraic K-groups of the former ring are direct sums of the algebraic K-groups of the latter ring and a Waldhausen category determined by the ring epimorphism. This result is then applied to noncommutative localizations of rings as well as rings with idempotent ideals.

In the second part, we shall discuss higher algebraic K-theory of recollements. Given a recollement of derived categories of three rings, we provide a sufficient condition to guarantee that the algebraic K-groups of the ring in the middle are direct sums of the algebraic K-groups of the remaining rings on both sides. This result is then applied to recollements arising from homological exact contexts.