SHIPING LIU, Université de Sherbrooke
Auslander-Reiten theory through triangulated categories

This is a joint work with Hongwei Niu. The Auslander-Reiten theory of almost split sequences and irreducible maps was originally studied in the representation theory of algebras and later introduced into other areas such as algebraic geometry and algebraic topology. In particular, the existence of almost split sequences and that of almost split triangles have been established by numerous authors in various categories such as module categories, abelian categories and triangulated categories. Working with extension-closed subcategories of triangulated categories, we shall be able to unify these existence theorems including Auslander's existence theorem of an almost split sequence in a module category over a ring and Krause's existence theorem of an almost split triangle in a triangulated category. We shall also talk about a generalization of a Serre functor introduced by Reiten and Van den Bergh.