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Relations between Cluster Algebras and Cluster Categories.

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Cluster categories were introduced in order to give categorical interpretation to the combinatorics of cluster algebras. Through both definitions and examples, I will illustrate the relation between the fundamental notions of cluster algebras: cluster variables, clusters, cluster mutations on one side, and indecomposable objects (which can often be modules), cluster tilting objects (a generalization of tiling modules) and tilting exchanges by approximations on the other side. The categories considered and used for defining cluster categories, are the derived categories of the quiver representations (module categories of path algebras).

Since the time of the original definitions of cluster categories, there were generalizations in several directions and I will spend part of the talk recalling some of them.