tau-tilting theory 1

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These talks are based upon joint work with Adachi, and the first talk is given by Reiten, and the second one is given by Iyama. We introduce and investigate a generalization of classical tilting modules, called (support) τ-tilting modules. For a finite dimensional algebra A over a field, we show that any indecomposable summand of a support τ-tilting A-module can be replaced in a unique way to get a new support τ-tilting A-module. This result is based on a bijection between support τ-tilting A-modules and functorially finite torsion classes in mod$A$. Moreover this gives a natural partial order on the set of support τ-tilting modules, and we show that the corresponding Hasse quiver coincides with the quiver obtained when mutating τ-tilting modules. We explain how these results were motivated by cluster theory, and how they generalize earlier results on 2-Calabi-Yau triangulated categories. We also explain a connection with silting theory, in particular with silting complexes which are two-term.