

On the number of tilting modules for Dynkin quivers via polytopes

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The number of tilting modules is classical known for type A and type D and recently attracted attention again in the work of Ringel and his coauthors. Moreover, certain closely related numbers also have been considered: the number of rigid modules, the number of exceptional sequences, the number of cluster tilting modules and the number of tilting complexes.

The aim of this talk is to relate all these numbers and to unify the computation, so that it is not case by case anymore. Moreover, the number of tilting modules does not depend on the orientation, however, so far, the computation depends on a choice of the orientation of the quiver. The principal idea is to define certain polytopes, so that the volume of these polytopes coincides with the number of tilting modules. Using this approach, we obtain several recursion formulas that relate the these numbers and allow to compute them in one strike for all Dynkin quivers and all orientations.

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