

## Gentle algebras: combinatorial and homological aspects

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Gentle algebras are a class of associative algebras defined by a quiver with relations. They appear naturally in many contexts: in tilting theory as iterated tilted algebras of types  $A$  and  $\tilde{A}$ , in cluster theory as Jacobian algebras associated to triangulations of surfaces, in symplectic geometry as endomorphism algebras of certain generators in Fukaya categories of surfaces, and in various other situations.

In this series of lectures, we will give an overview of the combinatorial and geometric tools available for the study of several aspects of gentle algebras, including their representation theory, derived categories, and  $\tau$ -tilting theory.