

# BRANCH ENLARGEMENTS OF CONCEALED-CANONICAL ALGEBRAS AND TRISECTIONS OF MODULE CATEGORIES

HAGEN MELTZER

This is a report on joint work with Jose Antonio de la Peña. We study concentrated tilting complexes on weighted projective lines in the sense of Geigle and Lenzing, that is tilting complexes for which the indecomposable direct summands which correspond to vector bundles are taken from one sheaf copy in the derived category. Our main result is:

**Theorem 1.** *For an algebra  $\Sigma$  the following conditions are equivalent.*

(i)  $\Sigma$  is the endomorphism algebra of a concentrated tilting complex on a weighted projective line.

ii)  $\Sigma$  is a branch enlargement of a concealed-canonical algebra.

(iii) The module category  $\text{mod}(\Sigma)$  admits a trisection  $(\text{mod}^+(\Sigma), \text{mod}^0(\Sigma), \text{mod}^-(\Sigma))$  with the following properties

( $\alpha$ -tubes) The indecomposables from  $\text{mod}^0(\Sigma)$  form a standard family of pairwise orthogonal  $\alpha$ -tubes.

(position of projectives) All indecomposable projective (resp. injective) modules belong either to  $\text{mod}^+(\Sigma)$  or to  $\text{mod}^0(\Sigma)$  (resp. either to  $\text{mod}^0(\Sigma)$  or to  $\text{mod}^-(\Sigma)$ ). Moreover there is a unique preprojective component.

(factorization) Each morphism from an indecomposable module from  $\text{mod}^+(\Sigma)$  to an indecomposable in  $\text{mod}^-(\Sigma)$  factors through an indecomposable module from  $\text{mod}^0(\Sigma)$ .

We also obtain many information concerning the module categories over branch enlargements of concealed-canonical algebras.