

Relating torsion classes via the Ziegler spectrum

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The lattice of torsion classes $\text{tors}A$ in the category of finite dimensional modules over a finite dimensional algebra A can be studied via an operation of mutation. Work of Adachi, Iyama and Reiten [1] shows that minimal inclusions of functorially finite torsion classes can be regarded as mutations of associated silting complexes. In [2] it is shown that the whole lattice $\text{tors}A$ admits a similar interpretation by associating a cosilting complex to each torsion class and considering cosilting mutation.

The cosilting complexes associated to torsion classes are not compact in general, but they are pure-injective, and they correspond bijectively to (pure-injective) cosilting modules. In this talk, we will describe mutation of cosilting modules as an operation that exchanges indecomposable pure-injective summands. This will allow us to regard minimal inclusions of torsion classes as an operation on the Ziegler spectrum of A .

The talk will be based on joint work with Ivo Herzog, Rosanna Laking and Francesco Sentieri.

References

- [1] T. Adachi, O. Iyama, I. Reiten, *τ -tilting theory*, *Compos. Math.* 150 (2014), 415-452.
- [2] L. Angeleri Hügel, R. Laking, J. Šťovíček, J. Vitória, *Mutation and torsion pairs*, arxiv:2201.02147