

# PARALLEL TALK: THE $\mathbf{c}$ -VECTORS OF AN ACYCLIC CLUSTER ALGEBRA

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In the theory of cluster algebras, a prominent role is played by two families of integer vectors, namely the  $\mathbf{c}$ - and the  $\mathbf{g}$ -vectors. They were first introduced in [2] in order to parameterize (respectively) the coefficients and the cluster variables of a (geometric) cluster algebra. In [3] the authors showed that both families were closely related provided that the  $\mathbf{c}$ -vectors satisfy the *sign-coherence* property, *i.e.* each  $\mathbf{c}$ -vector has either all its entries nonnegative or all its entries nonpositive. The sign-coherence of the  $\mathbf{c}$ -vectors was proved in [1] for the case of skew-symmetric exchange matrices, using decorated representations of quivers with potentials and for acyclic quivers. The clusters of  $\mathbf{c}$ -vectors were characterized in [4].

The preceding assertions help to convince ourselves that vectors are interesting and important to study. The aim of the talk is to prove that the set of  $\mathbf{c}$ -vectors of the cluster algebra associated to an acyclic quiver  $Q$ , coincides with the set of real Schur roots and their opposites in the root system associated to  $Q$ . For this purpose we recall the definition of  $\mathbf{c}$ -vectors and some important triangulated equivalences induced by tilting modules and by quiver mutation.

## REFERENCES

- [1] H. Derksen, J. Weyman and A. Zelevinsky, *Quivers with potentials and their representations II: Applications to cluster algebras*, J. Amer. Math. Soc. **23** (2010), 749-790.
- [2] S. Fomin and A. Zelevinsky, *Clusters algebras IV: Coefficients*, Composito Mathematica **143** (2007), 112-164.
- [3] T. Nakanishi, A. Zelevinsky, *On tropical dualities in cluster algebras*, eprint, arXiv:1101.3736, 2011.
- [4] D. Speyer, H. Thomas, *Acyclic cluster algebras revisited*, eprint. arXiv:1203.0277 [math.RT].