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Generalized associahedra as moment polytopes

Generalized associahedra are a well-studied family of polytopes associated to a finite-type cluster algebra and choice of starting cluster. We show that the generalized associahedra constructed by Padrol, Palu, Pilaud, and Plamondon, building on ideas from Arkani-Hamed, Bai, He, and Yan, can be naturally viewed as moment polytopes for an open patch of the quotient of the \mathcal{A} -cluster variety with universal coefficients by its maximal natural torus action. We prove our result by showing that the construction of Padrol, Palu, Pilaud, and Plamondon can be understood on the basis of the way that moment polytopes behave under symplectic reduction.

This is joint work with Michael Gekhtman.