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*An algebraic approach to projective uniqueness with an application to order polytopes.*

A polytope is said to be projectively unique if it has a single realization up to projective transformations. Projective uniqueness is a geometrically compelling property but is difficult to verify. In this talk, I will present two approaches to projective uniqueness in the literature. One is primarily geometric and is due to McMullen, who showed that certain natural operations on polytopes preserve projective uniqueness. The other is more algebraic and is due to Gouveia, Macchia, Thomas, and Wiebe. They use certain ideals associated with a polytope to verify a property called graphicality that implies projective uniqueness. I will show that McMullen's operations preserve not only projective uniqueness but also graphicality. As an application, I will show that order polytopes from finite ranked posets with no 3-antichain are graphic, and therefore projectively unique. (Received March 05, 2021)