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When are multidegrees positive?

The multidegrees of X are the analogues of the notion of degree in the multiprojective setting and are fundamental invariants that describe algebraic and geometric properties of X. In this talk we present recent results that provide necessary and sufficient conditions for the positivity of the multidegrees of X. As a consequence of our methods, we show that when X is irreducible, the support of multidegrees forms a discrete algebraic polymatroid.

As an application we will see how this resolves a conjecture by Monical-Tokcan-Yong that Double Schubert polynomials have the saturated Newton property. This is joint work with Yairon Cid-Ruiz, Binglin Li, Fatemeh Mohammadi, Jonathan Montaño and Naizhen Zhang.