

ROBUST EXTRANEOUS COMPONENTS OF CANNY'S RESULTANT

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Resultants are one of the oldest tools in computational algebraic geometry and can be used to compute a projection of an algebraic variety, that is, of a solution set of a system of polynomial equations. If this solution set has components of different dimensions, a resultant may be identically zero thus giving no interesting information. John Canny in 1990 proposed a workaround based on symbolic perturbation of the equations which was, in particular, used by Agnes Szanto in her algorithm for computing a triangular set representation of an algebraic variety. Because of being based on perturbations, Canny's approach may introduce extraneous components into the computed projection. Interestingly, some of them turn out to be very robust to the change of perturbation and thus hard to eliminate. We will discuss examples of some components and explain how they can be related to the invariants of the original algebraic variety.