Title: Approximate Polynomial Greatest Common Divisor

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Abstract: The computation of polynomial greatest common divisor (GCD) ranks among basic algebraic problems with many applications. The Euclidean algorithm is the oldest and usual technique for computing GCD. However, the GCD computation problem is ill-posed, particularly when some unknown noise is applied to the polynomial coefficients. Since the Euclidean algorithm is unstable, new methods have been extensively studied in recent years.

Methods based on the numerical rank estimation represent one group of current methods. Their disadvantage is that the numerical rank cannot be computed reliably due to the sensitivity of singular values on noise. The aim of the work is to overcome the ill-posed sensitivity of GCD computation in the presence of noise.

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