

# Queen's Algebraic Geometry — Seminar —

## NUMERICAL PRIMARY DECOMPOSITION

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### Abstract

Finding a primary decomposition of a polynomial ideal is a hard computational problem. There are effective symbolic algorithms, but they can be slow in practice. For problems over the complex numbers, numerical primary decomposition offers a new strategy that builds on the previous success of other numerical algebraic geometry algorithms. I will outline this approach. Our main contribution is an algorithm for determining if a specified point lies on an embedded component of an affine ideal or not. We use local dual space computations to determine information about the local Hilbert function of the ideal at the point in question. This is joint work with Anton Leykin.

Monday, 19 October 2015  
16:30–17:30  
319 Jeffery Hall