



# MANHATTAN ALGEBRA DAY

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## *Linear Algebra 1.5*

Friday, December 6, 2013

CUNY Graduate Center, Room 4102

9:30am

*Abstract:*

Most algebraists believe they know Linear Algebra. The purpose of this talk is to indicate that this is not necessarily true. We show a substantial amount of little known basic Linear Algebra and its connection to Algebraic Geometry, in particular to the theory of zero-dimensional subschemes of affine spaces, and to Computer Algebra, in particular to the task of solving zero-dimensional polynomial systems. Here are some questions which we will answer in this talk: What are the big kernel and the small image of an endomorphism? What are its eigenspaces and generalized eigenspaces if it has no eigenvalues? What is the kernel of an ideal? What is a commendable endomorphism? And what is a commendable family of endomorphisms? How is this connected to curvilinear and Gorenstein schemes? And how can you use this to solve polynomial systems?