



**Speaker:** Rahim Moosa  
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Thursday, March 26, 2015  
4:00 PM  
125 Hayes-Healy Hall

**Title:** Application of model theory to Poisson algebra

**Abstract:**

An affine complex Poisson algebra is a finitely generated commutative integral complex algebra equipped with a Lie bracket which is a derivation in each argument. Motivated by work of Dixmier and Moeglin on noncommutative algebras in the seventies, Brown and Gordon asked in 2003 about the equivalence of three properties of prime Poisson ideals: (1) the topological property of being locally closed in the Poisson spectrum, (2) the representation theoretic property of "primitivity", and (3) the algebraic property of "rationality". It was already known that (1) implies (2) implies (3). Somewhat surprisingly, the model theory of differentially closed fields can be used to show that there are in general rational Poisson prime ideals that are not locally closed. On the positive side, again involving model-theoretic ideas, we can prove that the equivalence does hold after a natural weakening of (1). I will report on these results and discuss some of the ideas in the proof. This is joint work with Jason Bell (Waterloo), Stephane Launois (Kent), and Omar Leon Sanchez (McMaster).