

UIC Model Theory Seminar, October 12, 2004

**Prolongations in differential algebra and the model theory of
differential fields**

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Prolongations of algebraic varieties were introduced by Buium in his work in differential algebraic geometry and applications to diophantine geometry. Since then, they have become an important tool in the model theory of differential fields. Buium's original definition applies to differential fields in characteristic zero with a single derivation, though it is clear that it should be possible to adapt it to more general contexts.

We develop the theory of prolongations over an arbitrary field with finitely many commuting derivations, and explain their relevance to model theoretic questions.