

Math 662. Topics in Logic: Model Theory of Differential Fields

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Time: MWF 12:50, but can be changed in the case of conflicts

A *derivation* on a ring R is an additive homomorphism $D : RR$ such that $D(xy) = D(x)y + xD(y)$. A *differential ring* is a ring with a fixed derivation. A *differential field* is a differential ring that is a field.

In this course we will consider model theoretic and algebraic properties of differential fields.

We will begin with the an introduction to necessary differential algebra and elementary theory of differential field. We examine types, ranks and prime models.

Other topics, I hope to cover in this course, are: Picard-Vessiot extensions and differentia Galois theory, Differential algebraic groups, Kolchin's Logarithmic derivative, Buium-Manin homomorphism, Zilber's trichotomy.