**COLLOQUIUM**

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“Differential Subfields of Extentions by Antiderivatives and Exponentials of Integrals”

Monday, February 23, 2009 at 3:00 p.m. in CH 107

Refreshments will be served in Math 238 at 3:30 p.m.

**Abstract**

Let **F** be a differential field with an algebraically closed field of constants and let **E F** be a no new constant extension of **F** such that **E** = **F** (x1, · · · , xℓ, y1, · · · , y*m*), where x*i*, y*j* **E**, **F** and  **F**.We call x*i* an antiderivative of an element of **F**, y*j* an exponential of anintegral of an element of **F** and **E** an extension by antiderivatives andexponentials of integrals of **F**. We will study the differential subfieldsof such extensions with the aid of the Kolchin-Ostrowski theorem,for which we will provide a proof. Next we will study the towers ofextensions by antiderivatives and in particular, we will focus on towersof extensions by iterated logarithms (IL). The differential subfields andnormality of IL towers will also be discussed.