Meeting: 1000, Albuquerque, New Mexico, SS 6A, Special Session on Arithmetic Geometry

1000-14-174 **Paul Vojta*** (vojta@math.berkeley.edu), University of California, Berkeley, Department of Mathematics, 970 Evans Hall #3840, Berkeley, CA 94720-3840. Arithmetic jet bundles. Preliminary report.

When working in positive or mixed characteristic, it is not a good idea to define jet differentials using iterated Kähler differentials. Instead, it is better to use Hasse-Schmidt divided differentials $d_n x$ (think: $(1/n!)d^n x$). These will be discussed briefly (for fuller details, see http://math.berkeley.edu/~vojta/jets.pdf). These differentials allow one to define jet spaces for arbitrary scheme morphisms $X \to Y$; such spaces are analogous to generalizations of the relative tangent bundle but they incorporate information on higher derivatives.

In his 1995 talk at Santa Cruz, J.-P. Demailly discussed compactified quotient jet spaces due originally to J. G. Semple and others. These correspond to certain closed subspaces of the iterated space of lines in the tangent bundle of a complex manifold: $X, \mathbb{P}(\Omega^1_{X/\mathbb{C}}), \mathbb{P}(\Omega^1_{\mathbb{P}(\Omega^1_{Y/\mathbb{C}})/\mathbb{C}})$, etc.

I will discuss current work in progress on extending the Semple-Demailly theory to arbitrary morphisms of schemes, via Hasse-Schmidt differentials. I will also say a few words about possible diophantine applications. (Received August 23, 2004)