LogConf 2010: Scientific Program

Fabrizio Andreatta: *Relative Fontaine's theory in the semistable case (joint work with A.Iovita)*

Daniel Caro: *Log-isocristaux surconvergents et surholonomie*

Valentina Di Proietto: *On p-adic differential equations on semistable varieties*

Abstract: We prove a comparison theorem between the category of certain modules with integrable connection on the complement of a normal crossing divisor of the generic fiber of a proper semistable variety over a DVR and the category of certain log overconvergent isocystrals on the special fiber of the same open.

Ofer Gabber: *On the Milnor fibres of log smooth morphisms*

Abstract : Ogus and Nakayama showed over the complex numbers that for a log smooth Q-integral map $X \to Y$ the associated map $X^{log} \to Y^{log}$ is a locally trivial fibration and I will discuss proofs of the corresponding result for étale cohomology.

Christine Huyghe: *D-modules arithmétiques dans le contexte de la géométrie arithmétique*

Emmanuel Lepage: *Prime to p tempered fundamental group*

Abstract : The prime to p tempered fundamental group of a p-adic analytic variety classifies a category of coverings that become topological coverings for the Berkovich topology after pullback by some Galois finite étale coverings of order prime to p. For a proper variety with semistable reduction, this prime to p tempered fundamental group can be recovered from the stable reduction: prime to p finite étale coverings of the variety correspond to prime to p Kummer étale coverings of the log reduction and the homotopy type for the Berkovich topology of each prime to p finite étale covering can be recovered from the combinatorics of the corresponding Kummer covering of the log reduction.

Yukiyoshi Nakkajima: *Weight filtrations on log crystalline cohomologies of families of split truncated simplicial semistable varieties*

Wieslawa Niziol: *Logarithmic K-theory*

Arthur Ogus (1): *On the foundations of log geometry*

Abstract: In this talk I will review the basic definitions and constructions of logarithmic geometry as formulated by Fontaine and Illusie and developed by Kato. My view is that logarithmic schemes serve as an analog of "manifolds with boundary," previously lacking in algebraic geometry. This view is partially justified by the construction of the ringed space X_{log} attached by Kato and Nakayama to a log analytic space X: if $X/\mathbf{C}$ is log smooth, then X_{log} is a manifold with boundary. I will also try to explore the boundaries of the theory, discussing notions that are still rather unclear, such as idealized log schemes and relatively coherent log structures, and in particular notions of smoothness and exactness for such structures.

Arthur Ogus (2): *On the topology of smooth morphisms in log analytic geometry*

Abstract: Attached to a morphism of log analytic spaces $f: X \to Y$ is a morphism of topological spaces $f_{log}: X_{log} \to Y_{log}$, which gives a good geometric picture underlying logarithmic cohomology. Kajiwara and Nakayama proved that if f is also smooth and proper, then the corresponding functors $R^q f_{log*}$ take locally constant sheaves to locally constant sheaves. Recent joint work with

Nakayama gives a geometric explanation of this fact: if f is smooth and exact, then the morphism f_{log} is a "topological submersion." This means that locally on X_{log}, f_{log} is homeomorphic to a projection from a product, and its fibers are oriented manifolds with boundary. This result can be viewed as a log version of the implicit function theorem, and seems also to hold for idealized log schemes and even for some useful incoherent log structures. The proof depends on a new interpretation of the moment mapping, inspired by the theorem of Birch in statistics.

Sandra Rozensztajn: *Comparison between étale and crystalline cohomology on some Shimura varieties*

Steffen Sagave: *Logarithmic structures in homotopy theory*

Stefan Schröer: *Toroidal Crossings and Log Structures*

Atsushi Shiho: *Logarithmic extension of overconvergent isocrystals and applications*

Jakob Stix: *On the p-adic section conjecture*

Abstract: The talk will present results from joint work with Florian Pop, in which we found that sections of the fundamental group extension of a hyperbolic curve over a p-adic field all meet certain geometric requirements.

Takeshi Tsuji: *Semi-stable reduction and arithmetic D-modules*

Abstract: For a log smooth scheme of semi-stable type over a perfect field of characteristic $p > 0$, we define and study p-adic nearby cycles and its cohomology by using D-modules on log schemes. This is a report of some results which I obtained during the last four years.

Angelo Vistoli: *Parabolic sheaves on logarithmic schemes*