

# SEMINÁRIO

## LÓGICA MATEMÁTICA

9 de Dezembro | 15h30 | sala 6.2.33

### A new cohomology for algebraic varieties over non-archimedean fields (*part III*)

Mário Edmundo  
(FCUL e CMAF<sub>c</sub>IO, Universidade de Lisboa)

**Abstract:**

The interplay between analytic geometry over non-archimedean fields and tropical geometry is a very active area with several applications in fields such as algebraic and arithmetic geometry. Recently, Hrushovski and Loeser introduced a model-theoretic account of the Berkovich's analytification of algebraic varieties: given a variety  $V$  over a non-archimedean field  $K$ , Hrushovski and Loeser associated to  $V$  the space  $\hat{V}$ , the stable completion of  $V$ , and showed a very deep connection between  $V$  and the tropical semi-group  $\Gamma_{\infty}$  where  $\Gamma$  is the value group of  $K$ : there is a deformation retraction from  $\hat{V}$  to a definable subset of some finite power of  $\Gamma_{\infty}$ . An analogous result was earlier proved by Berkovich for  $V^{\text{an}}$  under strong algebraic restrictions on the variety  $V$ . In this talk we report on the ongoing work (with P. Kovacsics and J. Ye) where we develop a sheaf cohomology theory for the spaces  $\hat{V}$ . When the field  $K$  is maximally complete of rank one, the spaces  $\hat{V}$  and  $|V^{\text{an}}|$  are naturally homeomorphic and we recover results proved by Berkovich for the cohomology groups.