

## Exposé plénier

### 5 **Rational curves, $p$ -adic curves, and sparsity of rational points**

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Let  $X$  be a variety over a number field  $k$ . Given an open set  $U$  in  $X$ , the rational points of  $U$  are said to be sparse if their number up to a bounded height grows slowly in a precise sense. We ask for a characterization of the largest open set  $U$  in  $X$  such that for every finite extension  $L$  of  $k$ , the  $L$ -rational points of  $U$  are sparse. Such a characterization will be (conjecturally) proposed using rational curves and using  $p$ -adic analytic maps, and we will discuss the relationship between these notions. We will also provide concrete examples where these conjectures can be proved. This is joint work with Natalia Garcia-Fritz.