

## Lifting Galois covers to characteristic zero with non-Archimedean analytic geometry

In this talk we deal with some lifting-to-characteristic-zero problems. Let  $k$  be an algebraically closed field of characteristic  $p > 0$  and  $R$  a complete DVR having  $k$  as its residue field. We want to know which automorphisms of  $k[[t]]$  can be obtained by reduction of automorphisms of  $R[[T]]$ . It is known that the answer is "all of them" when  $(|G|, p) = 1$ . When wild ramification phenomena appear, the question becomes much more complex.

In order to study this problem, the notion of Hurwitz tree has been introduced and worked out in the last ten years. This combinatorial object encodes at the same time the geometry of fixed points and the ramification theory of the  $G$ -action. We show in this talk how these Hurwitz trees can be canonically embedded in non-Archimedean analytic unit disks in the sense of Berkovich. We will explain how this result sheds new light on the lifting problem and in which sense these embedded Hurwitz trees "parametrize" certain  $G$ -torsors.