

João LOURENÇO : *Twisted Kac-Moody groups over the integers*

*Abstract.* In geometric representation theory, one is interested in studying the geometry of affine Grassmannians of quasi-split simply-connected reductive groups. In this endeavor, one of the main techniques, introduced by Faltings in the split case, consists in constructing natural realisations of these ind-schemes over the integers. In the twisted case, this was done by Pappas and Rapoport in the tamely ramified case, i.e. over  $\mathbb{Z}[1/e]$ , where  $e = 2$  or  $3$  is the order of the automorphism group of the split form we are dealing with. We explain how to extend the parahoric group scheme that appeared in work of Pappas, Rapoport, Tits and Zhu to the polynomial ring  $\mathbb{Z}[t]$  with integer coefficients and additionally how the group scheme obtained in char.  $e$  can be regarded as a parahoric model of a basic exotic pseudo-reductive group. Then we study the geometry of the affine Grassmannian and also its global deformation à la Beilinson-Drinfeld, recovering all the known results in the literature away from  $e = 0$ . This also has some pertinence to the study of local models of Shimura varieties in wildly ramified cases.