Parking functions and labeled trees

António Guedes de Oliveira Michel Las Vergnas

It is well-known that the set of parking functions of size n and the set of rooted labeled forests with n vertices (or the set of labeled trees with $n+1$ vertices) are in bijection. In fact, in a paper from 1980, Kreweras, after finding a common enumerator of parking functions bye the total number of probes and of rooted forests by the number of inversions, even constructs a bijection that sends parking functions with k probes to forests with k inversions. However, his definition is recursive, and in a recent paper Stanley asks for a direct bijection with this property, unknown at the moment.

In this talk I will show a solution to this problem, providing a bijection with the required property. It may be seen as an extension of very recent work of Shin, which was in fact the starting point in our investigation.