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FIXED POINTS AND CYCLES OF PARKING FUNCTIONS

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A *parking function* of length n is a sequence $\pi = (\pi_1, \ldots, \pi_n)$ of positive integers such that if $\lambda_1 \leq \cdots \leq \lambda_n$ is the increasing rearrangement of $\pi_1, \ldots, \pi_n$, then $\lambda_i \leq i$ for $1 \leq i \leq n$. The index i is a fixed point of the parking function π if $\pi_i = i$. More generally, for $m \geq 1$, the indices $(i_1, \ldots, i_m)$ where the i_j's are all distinct constitute an m-cycle of the parking function π if $\pi_{i_1} = i_2, \pi_{i_2} = i_3, \ldots, \pi_{i_{m-1}} = i_m, \pi_{i_m} = i_1$. In this paper we obtain some exact results on the number of fixed points and cycles of parking functions. Our derivations are based on generalizations of Pollak's argument and the symmetry of parking coordinates. Extensions of our techniques are discussed.

This is joint work with Martin Rubey.