Vector Parking Functions and Tree Inversions

Gaydarov, Petar

We find a depth-first search version of Dhar's burning algorithm that gives a bijection between the parking functions of a multigraph and its spanning trees. Thus we extend a result by Perkinson, Yang and Yu in response to a problem posed by Stanley. We also find another variant of this algorithm which gives a bijection between vector parking functions and labeled spanning trees closely related to the rooted planar trees. Both bijections have the goal of establishing a relation between the degree of a parking function, the κ-statistic for inversions, and the edge labelling of a tree. In addition, we find an intriguing formula for the number of vector parking functions in a special case of particular interest.

Awards Won:
American Mathematical Society: Second Award of $200