

Truth-telling and Nash equilibria in minimum cost spanning tree models

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We consider the Minimum Cost Spanning Tree model and assume that a central planner aims at implementing a minimum cost spanning tree not knowing the true link costs. The central planner sets up a game where agents announce link costs, a tree is chosen and costs are allocated according to the rules of the game. We characterize ways of allocating costs such that true announcements constitute Nash equilibria both in case of full and incomplete information. In particular, we find that the Shapley rule based on the irreducible cost matrix is consistent with truthful announcements while a series of other well-known rules (such as the Bird-rule, Serial Equal Split, the Proportional rule etc.) are not.