

Inspection Games

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Abstract

Starting with the analysis of arms control and disarmament problems in the sixties, inspection games have evolved into a special area of game theory with specific theoretical aspects, and, equally important, practical applications in various fields of human activities where inspection is mandatory.

In this contribution, a survey of applications is given first. Then, the general problem of inspection is presented in a game theoretic framework as an extension of a statistical hypothesis testing problem. Using this framework, two important models are solved: material accountancy and data verification. A second important aspect of inspection games are limited inspection resources that have to be used strategically. This is presented in the context of sequential inspection games, where many mathematically challenging models have been studied. Finally, the important concept of leadership, where the inspector becomes a leader by announcing and committing himself to his strategy, is shown to apply naturally to inspection games.