Incentive Compatibility under Informational Decentralization

Background

The paper takes the classical impossibility results of mechanism design as given. It does not:

- weaken or refute the Revelation Principle
- overturn any impossibility results within their assumptions
- rely on repeated-game discipline, reputation effects, or exogenous commitment devices

Summary of Paper

A subclass of *non revelation-equivalent indirect mechanisms* exists which permits incentive compatibility under conditions of informational decentralization. The existence of this class is anticipated in theory. The class:

- falls into the non–revelation-equivalent class under standard theory
- employs multidimensional, non-scalar message spaces
- has compartmentalized layers running in parallel
- uses a dual enforcement regime to price deviations in unobserved strategic dimensions
- ensures all deviations that alter equilibrium allocations alter continuation value

Implications for Economics and Computer Science

The mechanism lies outside the direct-mechanism paradigm that underlies much distributed systems theory. Its existence clarifies the scope of several canonical results in computer science by isolating the modelling assumptions on which they depend.

- Incentive compatibility can arise from pricing non-verifiable dimensions via uncertainty. (econ)
- Direct-mechanism models are excluded from implementing this solution by construction. (econ)
- Some strategic dimensions must remain private to sustain enforcement. (econ)
- Several canonical impossibility results in computer science are conditional on direct mechanism modeling assumptions. (cs)
- In fee mechanisms, UIC + MIC become possible at the cost of ex post verifiability (cs)