Auctions as Experiments

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Abstract:
Consider an auction with buyers whose values depend on an underlying state (e.g., market fundamentals). How does the auction format shape the information that buyers' bids reveal about the state? We recast auctions as statistical experiments and compare different auction formats in terms of the (Lehmann) informativeness of the induced experiments. Our main finding is that among a large class of auctions (e.g., kth-price, all-pay), the first-price auction is the most informative. As a result, this auction guarantees the highest payoffs to a decision-maker who uses information revealed by buyers' bids to make a decision (e.g., to solve a prediction problem or choose a reserve price in a future auction).