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講題：Self- vs. Social Optimization in Queueing Management

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Abstract

Suppose customers arrive at an observable queueing system for service with a utility function of reward and waiting cost. The self- (customer) decision is whether to queue or balk, and the social (system administrator) goal is to maximize the profit of the whole system. While the self-optimal policy is relatively easy to obtain, the socially optimal policy, which is of more practical importance, often requires a tedious and ad hoc analysis due to the external effects.

We will introduce a simple and general approach to determine the optimal admission policy. The main idea of this approach is to consider a special rule that admits an extra customer who is served only by the surplus capacity and bears all the increased waiting time and thus incurs no external cost. The approach applies in principle to queues with exponential service. In fact, for such queues, a marginal analysis based on this rule will explore the properties of the optimal social policy and lead to a general procedure of deriving the optimal threshold. It also sheds insight into why optimal self- and social policies are different.