Optimal Intensity Control of Point Processes

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Abstract

Consider the intensity control of a point process to maximize the expectation of a function of the time when a predetermined count of events occurs. We show that if the objective function is unimodal, then the optimal control is of the bang-bang type. Moreover, if the objective function is log-concave, so is the value function. These results solve the generalized intensity control problem that were raised by Bremaud (1976) and Defourny (2018), and resolve the two conjectures proposed by Defourny (2018).