1163-49-1150          **Ryan Hynd** and **Dennis Ikpe\*** (`ikpedenn@msu.edu`), 1230 Garden City Road, East Lansing, MI 48823, and **Terrance Pendleton**. *An eradication time problem for the SIR model.*

We consider a susceptible, infected, and recovered infectious disease model which incorporates a vaccination rate. In particular, we study the problem of choosing the vaccination rate in order to reduce the number of infected individuals to a given threshold as quickly as possible. This is naturally a problem of time-optimal control. We characterize the optimal time as a solution of a Hamilton-Jacobi-Bellman equation and give necessary and sufficient conditions for a vaccination rate to be optimal. (Received September 14, 2020)