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Singular Control with State Constraints.

In this talk I will consider a singular stochastic control problem with an infinite horizon discounted cost criterion. The cost function, state space and control set are all unbounded. In particular, the state space is a polyhedral cone in \mathbb{R}^k and for a control to be admissible the corresponding controlled process must satisfy the state constraint condition. For the cost function we assume that polynomial upper and lower bounds (of the same order) hold. We show that the value function V is the unique solution of the associated Bellman equation with a state constraint boundary condition, in the sense of viscosity solutions. Such control problems arise in the formal heavy traffic limit analysis of scheduling control in open queuing networks. The connection between the above problem of singular control with state constraints and the *Brownian control problems* of Harrison(1988) will be described. This is a joint work with Rami Atar. (Received February 23, 2004)