

Alberto Bressan (bressan@[omit]math.psu.edu), Department of Mathematics, Pennsylvania State University, University Park, PA 16802; and **Yunho Hong*** (yyh101@[omit]psu.edu), Department of Industrial and Manufacturing Engineering, Pennsylvania State University, University Park, PA 16802, *Optimal Control Problems on Stratified Domains*.¹

Abstract. We consider a class of optimal control problems on a stratified domain. We assume that the state space \mathbb{R}^N admits a stratification as a disjoint union of finitely many embedded submanifolds \mathcal{M}_i . The dynamics of the system and the cost function are Lipschitz continuous restricted to each submanifold. We provide conditions which guarantee the existence of an optimal solution, and study sufficient conditions for optimality. These are obtained by proving a uniqueness result for solutions to a corresponding Hamilton-Jacobi equation with discontinuous coefficients, describing the value function. Our results are motivated by various applications, such as minimum time problems with discontinuous dynamics, and optimization problems constrained to a bounded domain, in the presence of an additional overflow cost at the boundary. This talk is based on the paper [A. Bressan and Y. Hong, “Optimal control problems on stratified domains,” *Networks and Heterogeneous Media*, Volume 2, Number 2, June 2007, pp. 313-331.] which is available at <http://aimsciences.org/journals/doIpChk.jsp?paperID=2508&mode=full>.

Biographical Sketch. Yunho Hong was born in South Korea and received his B.S. and M.E. degrees in Industrial Engineering from Dongguk University and Korea University, respectively. Both universities are in Seoul, South Korea. He worked for the KIA Motors Company R&D Center in South Korea for five and half years. He expects to get his Ph.D. in Industrial Engineering from Pennsylvania State University in Summer 2007. His adviser in Industrial Engineering is Soundar R.T. Kumara. His adviser in Mathematics is Alberto Bressan. This talk deals with a part of his thesis. His early Ph.D. work was on multi-agent systems, pattern recognition, and simulation based optimization (i.e. reinforcement learning) for queueing systems.

¹The [omit] should be omitted when sending email. It was included here to avoid automatic “harvesting” by spam-list makers.