1116-49-97 **Tan Hoang Cao*** (tan.cao@wayne.edu), 641 Prentis Street, apt 111, Detroit, MI 48201. *Optimal control of the perturbed sweeping process over polyhedral controlled set.* Preliminary report.

The paper addresses a new class of optimal control problems governed by the dissipative non-Lipschitzian differential inclusion of the perturbed sweeping/Moreau process over a moving controlled polyhedral set. Besides the highly non-Lipschitzian nature of the unbounded differential inclusion of the controlled perturbed sweeping process, the optimal control problems under consideration contain intrinsic state constraints of the inequality and equality types. All of this creates serious challenges for deriving necessary optimality conditions. We first establish the strong convergence of optimal solutions of discrete approximations to a local minimizer of a continuous-time system and obtain necessary conditions for discrete counterparts of the controlled sweeping process under consideration. And then we derive constructive necessary conditions for the original perturbed sweeping process problem expressed entirely in terms of the data and the reference trajectory. Our approach to necessary optimality conditions is based on the method of discrete approximations and generalized differential tools of variational analysis. The established necessary optimality conditions for the perturbed sweeping process are illustrated by some nontrivial examples. (Received July 22, 2015)