OPTIMAL CONTROL OF PARALLEL HYBRID ELECTRIC VEHICLES BASED ON THEORY OF SWITCHED SYSTEM

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ABSTRACT

The focus of this paper is the control strategy used to control general parallel hybrid electric vehicles (HEV). The torque split control problem of HEV is formulated as the optimal control of a switched system. A model-based strategy for fuel-optimal control is presented. The optimal control problem of such a switched system is formulated as a two-stage optimization problem. Dynamic programming is utilized to determine the optimal control action that minimizes the cost function. Simulated results indicate that this method is effective.

KeyWords: Hybrid electric vehicles (HEV), optimal control, dynamic programming, switched system.