Optimality conditions for finite-time and fixed-time stability of time-varying impulsive differential equations

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In order to study a finite-time, fixed-time stability of impulsive differential equation we transform the finite-time stability and fixed-time stability problem into optimal control problem. Then we build dual dynamic methodologies and verification theorems to formulate and to prove sufficient conditions for finite-time and fixed-time stability. The essential new point in that methodology is to include impulses as controls. It causes some difficulties but given examples show importance of impulses in controlling stability.. . .

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