

## Discrete Sliding Modes Regulator with Exponential Holder for Non-Linear Systems

**Authors :** G. Obregon-Pulido , G. C. Solis-Perales, J. A. Meda-Campana

**Abstract :** In this paper, we present a sliding mode controller in discrete time. The design of the controller is based on the theory of regulation for nonlinear systems. In the problem of disturbance rejection and/or output tracking, it is known that in discrete time, a controller that uses the zero-order holder only guarantees tracking at the sampling instances but not between instances. It is shown that using the so-called exponential holder, it is possible to guarantee asymptotic zero output tracking error, also between the sampling instant. For stabilizing the problem of close loop system we introduce the sliding mode approach relaxing the requirements of the existence of a linear stabilizing control law.

**Keywords :** regulation theory, sliding modes, discrete controller, ripple-free tracking

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