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Sub-optimal Integral State Feedback Control of Final Value Problems

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Abstract: *Modem control system studies and applications essentially demand 'best' system performance on the basis of a chosen objective function and the implementation of an optimal control policy to achieve the same. The optimisation is carried out in the time domain by the state variable approach extremising a desired performance criterion function. Sub-optimal control schemes incorporating integral state feedback and time-invariant gain parameters have been suggested for dynamic optimisation problems without control constraints. This paper discusses the necessary conditions that have been obtained in respect of a general sub-optimal control configuration and specifically applied to linear and nonlinear final value control problems. The sub-optimal schemes can handle a variety of control situations and appear to be good from the point of view of feasibility of synthesis and ease of implementation on-line. It is expected that the proposed sub-optimal feedback structure will be useful for many practical systems that are otherwise difficult to be optimally controlled in a feedback fashion.*

Keywords: *Sub-optimal, feedback control, optimisation, configuration*