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Two-step design of proportional integral-feedback controllers for singularly perturbed systems. (English) [Zbl 0666.93039](#)

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The paper presents a new two-step design of proportional integral feedback controllers for singularly perturbed systems with constant disturbances. The control law is derived using a slow subsystem obtained through the iterative approach. It is shown that the integral gain computation can be separated from proportional control design. The proposed design procedure is demonstrated in controller design for a synchronous machine connected to an infinite-bus.

MSC:

93B50 Synthesis problems

93C05 Linear systems in control theory

34D15 Singular perturbations of ordinary differential equations

93D15 Stabilization of systems by feedback

93B35 Sensitivity (robustness)

93C15 Control/observation systems governed by ordinary differential equations

Keywords:

two-step design; proportional integral feedback; singularly perturbed systems; time-invariant; continuous-time