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Optimal Synthesis for a Triple Integrator with a State Constraint

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Abstract—The time-optimal problem of steering a triple integrator from an arbitrary point to the origin is considered under constraints on the input control and on one of the state variables. An optimal control is synthesized based on the maximum principle in the Dubovitskii–Milyutin form.

Keywords: control system, time optimality, state constraint, maximum principle, switching points, Lebesgue–Stieltjes measure, optimal synthesis.

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