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## Dynamics of ellipsoidal estimates of reachable sets for a special class of control systems

Construction and studying of reachable sets of systems is the important problem in the theory of optimization of dynamic control systems. The precise determination of reachable sets usually presents a very complicated problem, but one can be often satisfied with finding two-sided (inner and outer) ellipsoidal approximations of these sets. The full theory of construction of the ellipsoidal estimates is now developed for linear control systems [1, 2]. In the present paper, we apply both the an ellipsoidal technique and a technique of evolution funnel equation [3]. These are applied for the outer state estimation for a class of nonlinear control systems with uncertainty in the initial states. The model of uncertainty considered here is deterministic, with set-membership description of uncertain items which are taken to be unknown but bounded [1]. Models of this kind arise in a wide variety of applications ranging from engineering problems to economical and ecological management. In the papers [4, 5] we presented the iterative algorithm of set-valued estimations of reachable sets of such systems. The aim of this paper is to generalize and extend earlier results relating to precise description of the estimating ellipsoid parameters.

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