

This technical note deals with the identification problem for a linear dynamic plant described by an autoregressive moving average model with additive external noise (exogenous disturbance). We use an approach which is based on randomization of control and allows to make minimal assumptions about the noise: randomized test perturbations in control and the external noise must be stochastically independent. In particular, any unknown but bounded deterministic real sequence is an example of such a noise. In the case of a finite set of observations, we propose two procedures for computing data-based confidence regions for unknown parameters of the plant. They could be used in adaptive control schemes. The first procedure is of the stochastic approximation type, while the second one is developed in the general framework of “counting of leave-out sign-dominant correlation regions” (LSCR), which returns confidence regions that are guaranteed to contain the true parameters with a prescribed probability. If the number of observations increases infinitely, we propose the combined procedure for computing confidence regions which shrink to the true parameters asymptotically. The theoretical results are illustrated via a simulation example with a nonminimum-phase second-order plant.