Perspectivity of mathematical modeling of nonlinear dynamic systems by the Volterra series tool is connected with presence of effective algorithms of identification of the Volterra series. <BR>

In the report the method of identification, based on the giving test input perturbation from the class of piecewise constant functions is considered. The efficiency of the considered approach is explained by that the multi-dimensional Volterra integral equations of I kind, to solving of which the problem of identification is reduced, admit explicit inversion formulas. The difference analogues of these formulas derivate self-regularizing algorithms. <BR>

By universality of the proposed approach it is possible to apply it for modeling of the wide class of dynamic systems, admitting realization of active test experiments. <BR>

In particular, it was successfully approved on a problem of modeling heat exchangers in power installations.