

Variance Based Dynamic Sensitivity Analysis of Dynamic Process

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A sensitivity analysis (SA) is a study to show how uncertainty in the output of a model can be apportioned to different parameters of the model [1, 2]. The result of a SA is important and can be used to: validate a model, suggest which parameters are the most important, suggest the accuracy to which the parameters must be calculated, etc. In the dynamic SA, the sensitivity indices can be calculated as functions of time and it can be seen when each parameter has the greatest effect on the output function of the interested model. In this paper, variance based dynamic sensitivity problem for dynamic processes, which are popular models in process control, is solved using the multiplicative dimensional reduction method. This work was supported by the Development of 300MW class Korean IGCC demonstration plant technology of the Korea Institute of Energy Technology Evaluation and Planning (KETEP) and Doosan Heavy Industries and Construction grant funded by the Korea government Ministry of Knowledge Economy. This work was also supported by Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2014R1A6A1031189).