

# Abstract

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**Dynamic safety margin (DSM) is a new performance index used to measure the distance between a predefined safety boundary in the state space and the system trajectory as it evolves. Controller design based on DSM is important to maintain a predefined margin**

Dynamic safety margin (DSM) is a new performance index used to measure the distance between a predefined safety boundary in the state space and the system trajectory as it evolves. Controller design based on DSM is important to maintain a predefined margin of safety during the transient and in the presence of large disturbances particularly in safety-critical systems. In this paper, a fault tolerant control design, using predictive controller based on DSM, to recover system performance after some system faults is discussed. In addition, real-time results of a control system, which was implemented in a two-tank system, are presented to demonstrate the fruitfulness of this design