Detection and Accommodation of Second Order Distributed Parameter Systems with Abrupt Changes in Input Term: Existence and Approximation.

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Abstract: The purpose of this note is to investigate the existence of solutions to a class of second order distributed parameter systems with sudden changes in the input term. The class of distributed parameter systems under study is often encountered in flexible structures and structure-fluid interaction systems that use smart actuators. A failure in the actuator is modeled as either an abrupt or an incipient change of the actuator map whose magnitude is a function of the measurable output. A Galerkin-based finite approximation for the adaptive diagnostic observer and its on-line approximator is proposed in order to facilitate the numerical implementation of the aforementioned diagnostic observer.