

סמינר מדעי היסוד  
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## **Add-on simple adaptive control improves performance of classical control design**

### **Abstract**

The Simple Adaptive Control (SAC) controls an augmented plant that comprises the true plant with parallel feed-forward. The Almost Strictly Positive Real (ASPR) property of the augmented plant leads to asymptotic following. Prior publications have shown that, based only on the prior knowledge on stabilization properties of systems (usually available), the parallel feed-forward configuration (PFC) allows adaptive control of realistic systems, even if they are both unstable and non-minimum phase. However, it was commonly thought that the PFC addition requires a price when compared with good linear time invariant (LTI) designs that do not use any addition to the plant.

The paper shows that the use of SAC with PFC as Add-On to LTI system design improves the performance. Although SAC indirectly controls the error, it always gives improved performance, i.e., smaller tracking error and reduced sensitivity to plant disturbance, with respect to the best LTI controller.

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