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Stabilization of Fractional Coupled Systems

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Abstract

This paper investigates the stabilization of a coupled linear system governed by Caputo time fractional derivatives. We propose an additive control acting on only one equation, which is shown to ensure strong stabilization of the entire system. The well-posedness of the controlled model is first established. Using a spectral decomposition approach, we then design a feedback control law that achieves stabilization with explicit polynomial decay rates.

Keywords: Fractional systems, coupled systems, stabilization systems, feedback control.

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