# Nonregular Decoupling with Stability of Two-Output Systems.

José Javier Ruiz-León; Jorge A. Torres Muñoz; Francisco Lizaola

*Abstract*: In this paper we present a solution to the decoupling problem with stability of linear multivariable systems with 2 outputs, using nonregular static state feedback. The problem is tackled using an algebraic-polynomial approach, and the main idea is to test the conditions for a decoupling compensator with stability to be feedback realizable. It is shown that the problem has a solution if and only if Morse's list $I_2$ is greater than or equal to the infinite and unstable structure of the proper and stable part of the stable interactor of the system. A constructive procedure to find a state feedback, which achieves decoupling with stability, is also presented.