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A path-following method for solving BMI problems in control

A. Hassibi, J. How, and S. Boyd

Proceedings of American Control Conference, 2:1385-1389, June 1999.

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In this paper we present a path-following (homotopy) method for (locally) solving bilinear matrix inequality (BMI) problems in control. The method is to linearize the BMI using a first order perturbation approximation, and then iteratively compute a perturbation that ‘slightly’ improves the controller performance by solving a semidefinite program (SDP). This process is repeated until the desired performance is achieved, or the performance cannot be improved any further. While this is an approximate method for solving BMIs, we present several examples that illustrate the effectiveness of the approach.

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