

## Robust Pole Placement for Second-order Systems

Didier Henrion; Michael Šebek; Vladimír Kučera

*Abstract:* Based on recently developed sufficient conditions for stability of polynomial matrices, an LMI technique is described to perform robust pole placement by proportional-derivative feedback on second-order linear systems affected by polytopic or norm-bounded uncertainty. As illustrated by several numerical examples, at the core of the approach is the choice of a nominal, or central quadratic polynomial matrix.

*Keywords:* polynomial matrix; second-order linear systems; LMI; pole placement; robust control;

*AMS Subject Classification:* 93E12; 62A10; 62F15 ;