

## Parametrization and Reliable Extraction of Proper Compensators.

Ferdinand Kraffer; Petr Zagalák

*Abstract:* The polynomial matrix equation  $X_l D_r + Y_l N_r = D_k$  is solved for those  $X_l$  and  $Y_l$  that give proper transfer functions  $X_l^{-1} Y_l$  characterizing a subclass of compensators, contained in the class whose arbitrary element can be cascaded to a plant with the given strictly proper transfer function  $N_r D_r^{-1}$  such that wrapping the negative unity feedback round the cascade gives a system whose poles are specified by  $D_k$ .

The subclass is navigated and extracted through a conventional parametrization whose denominators are affine to row echelon form and the centre is in a compensator whose numerator has minimum column degrees. Applications include stabilization of linear multivariable systems.

*Keywords:*

*AMS Subject Classification:* 93B;