Multivariable Feedback Control
Homework 04 - due 2 days before the exam.

The goal of this homework is to investigate ***MIMO systems robust performance, zeros/poles and decoupling***.
The more you explore, the better.

Problem 1 For the three-mass system considered in HW03 (2×2 MIMO system), complete the robust performance control design. In particular show how the extra "fake" unstructured uncertainty Δ_F is used (this is transparent to the `musyn` command, so you need to do some extra work, probably using `lftdata`, `mussv` or similar commands).

Problem 2 For the three-mass system considered in HW03, find the transmission zeros together with their input and output directions (when possible) in the following two cases:

- for the 2×2 MIMO system;
- for a Two-Inputs/One-Output (TISO) and a One-Input/Two-Output (SITO) case of your choice (referred to this physical system).
- Show the blocking property of a zero also by simulation.

Problem 3 For the three-mass 2×2 MIMO system try and discuss all possible decoupling schemes and, if possible, also the sequential loop closure procedure.

Problem 4 For a 2×2 system of your choice with at least a non-minimum phase (NMP) zero, try to highlight some of the performance limitations due to the presence of this zero(s).