LMI OPTIMIZATION WITH APPLICATIONS IN CONTROL

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Course outline
First part

I.1. Technical background (linear algebra, numerical analysis)
I.2. What is an LMI ? (historical survey, SDP)
I.3. LMI duality (Lagrangian, multipliers)
I.4. Convex LMI modelling (liftings and projections)
I.5. Nonconvex LMI modelling (relaxations)
I.6. LMI solvers (interfaces and algorithms)

Course outline
Second part

II.1. State-space analysis methods
II.2. State-space design methods
II.3. Polynomial analysis methods
II.4. Polynomial design methods

Course material

Convex optimization (including LMI):

- A. Ben-Tal, A. Nemirovskii. www.isye.gatech.edu/∼nemirovs

Modern Convex Optimization. SIAM, 2001

- S. Boyd, L. Vandenberghe. www.stanford.edu/∼boyd

Convex Optimization. CUP, 2005

LMI solvers and interfaces:

- J. Löfberg's YALMIP wiki

www.control.isy.liu.se/∼johanl

LMI in control:

- C. Scherer, S. Weiland.

EECI graduate school on control