MAX-PLANCK-INSTITUT
FÜR DYNAMIK KOMPLEXER
TECHNISCHER SYSTEME
MAGDEBURG

CSC Seminar

SPEAKER

Anping Tang

TITLE

Smoothing Gradient Method for Group Sparse Feedback Stabilization

ABSTRACT

We investigate the problem of designing group-structured sparse feedback stabilization gain matrix for linear systems that come with the advantage of simultaneously reducing the numbers of active points of measurements and control as well as communication. The basic idea is to define a matrix norm that evaluates the sparsity of the gain matrix in general but also measures zero rows and zero columns. To make use of this measure, we use the integral performance of the state transition matrix to formulate the group-structured sparse feedback stabilization problem as an optimization problem with a convex penalty. Since the resulting problem is non-smooth, a smoothing gradient algorithm is proposed to solve the group sparse optimization problem efficiently with a convergence guarantee under suitable parameter choices. Finally, numerical examples are provided to illustrate the effectiveness of the approach.

Tuesday, February 14, 2023 at 2 pm

seminar room Prigogine