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DSI-NRF CENTRE OF EXCELLENCE IN MATHEMATICAL & STATISTICAL SCIENCES

CoE-MaSS weekly seminar series

THE DSI-NRF CENTRE OF EXCELLENCE IN MATHEMATICAL AND STATISTICAL SCIENCES (CoE-MaSS) PRESENTS A SEMINAR BY

Prof Sanne Ter Horst

(Department of Mathematics and Applied Mathematics, North-West University)

"The H∞-problem in multidimensional control theory: state-space versus frequency-domain formulation"

Friday, 13 September 2019
10h30-11h30
CoE-MaSS Seminar Room, 1st floor, MSB, Wits.

Two by now standard approaches to the classical H∞-problem go either through co-prime factorizations reducing it to a metric constrained interpolation problem, or via state-space realizations of the given data functions and admissible controllers leading to a description of the solutions in terms of solutions of coupled linear matrix inequalities (LMIs). The connection between the interpolation and the state-space approach relies on the seamless equivalence of frequency-domain and state-space representations. In the cases of multivariable interpolation and systems with structured uncertainty, similar reductions and solution criteria exist, after some compromises with respect to the solution criterions. The connection between the results however is not clear due to the failure of the state-space similarity theorem and Kalman decomposition in these settings, and as a result research on the two topics has diverted. In this talk we discuss some of these developments.

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