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## Vortragsankündigung

Seminar Regelungssysteme LV 0430L654

Mittwoch, 13. Januar 2016, 11:00 Uhr  
Vortragsort: EN 223

**Dr. Yanling Wei**  
TU Berlin

### “Spectral Conditions for Strict Positive Realness of Reciprocal Descriptor Systems ”

Positive realness of LMI systems is a fundamental concept in classical control theory, which entitles the LTI systems to the property that does not generate its own energy but only stores and dissipates energy supplied by the environment. This talk will present non-Hamiltonian generalized necessary and sufficient conditions for strict positive realness of reciprocal systems with a regular index-one descriptor realization. The spectral conditions refer to a matrix product, specified by the system matrices and the external signature matrix. Thereby, negative real eigenvalues are declined, while a zero eigenvalue of an algebraic multiplicity fixed by the sum of the rank deficiency of the feedthrough Markov parameter and the dimension of the infinite deflating subspace is demanded. In addition, an application on the equivalence of strict positive realness of LTI systems and the existence of common quadratic Lyapunov function (CQLF) for newly reformulated switched linear systems will be discussed.