



SEMINAIRE LASQUO & LISA

**Lundi 4 juillet à 14h00
Salle 411 (ISTIA)**

Ying SHANG (université d'Edwardville) : 14h00

Résumé:

The max-plus linear systems, widely used in many applications in communication networks, genetic regulatory networks, and queueing systems, have been studied for almost three decades. However, a well-established system theory on such specific systems is still an ongoing research. The geometric control theory in particular was proposed as the future direction for max-plus linear systems by Cohen et al. This presentation reports upon recent investigations on a new algebraic and geometric approach for max-plus linear systems. This talk introduces a generalized R.E. Kalman's abstract realization theory not only to provide a more concrete state space representation other than just a 'set-theoretic' representation for a transfer function, but also leads to the computational methods for different controlled invariant sets in the kernel and the equivalence kernel of the output map. In addition, this talk presents computational methods for different robust invariant sets for a class of uncertain max-plus linear systems, where system matrices are unknown but are convex combinations of known matrices. A search algorithm is presented for the positively robust invariant polyhedral sets. These controlled invariant sets play key roles in the standard geometric control problems, such as the disturbance decoupling problem and the block decoupling problem. The main results are illustrated by applications in a queueing network and a public transportation network.

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Quelques réflexions et exemples sur le concept d'injectivité en algèbre tropicale