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## Infinite-dimensional input-to-state stability

### Abstract

In this talk we discuss infinite-dimensional versions of well-known stability notions relating the external input  $u$  and the state  $x$  of a linear system governed by the equation

$$\dot{x} = Ax + Bu, \quad x(0) = x_0.$$

Here,  $A$  and  $B$  are unbounded operators. For instance, the system is called  *$L^p$ -input-to-state stable* if

$$u(\cdot) \mapsto x(t)$$

is bounded as a mapping from  $L^p(0, t)$  to the state space  $X$  for all  $t > 0$ . In particular, we elaborate on the relation of this notion to *integral input-to-state stability* and *(zero-class) admissibility* with a special focus on the case  $p = \infty$ .

This is joint work with B. Jacob, R. Nabiullin and J.R. Partington.

Talk time: 07/18/2016 5:30PM— 07/18/2016 5:50PM

Talk location: Cupples I Room 113

Special Session: State space methods in operator and function theory. Organized by J. Ball and S. ter Horst.