

EINLADUNG ZUM MATHEMATISCHEN KOLLOQUIUM

Es spricht

Prof. Dr. Juan Ignacio Giribet

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zum Thema:

„Analysis and design of hexacopter fault tolerance“

Abstract :

A proof is presented, of how an hexagon shaped hexacopter can be designed in order to keep the ability to reject disturbance torques in all directions while counteracting the effect of a failure in any of its motors. The method proposed is simpler than previous solutions since it does not require to change the motor rotation direction or any in-flight mechanical reconfiguration of the vehicle. It consists in tilting the rotor a small fixed angle with respect to the vertical axis. Design guidelines are presented to calculate the tilt angle in order to achieve fault tolerant attitude control without losing any significant vertical thrust.

It is also formally proved that the minimum number of unidirectional rotating motors needed to have fault tolerance is six, and that this can be achieved by tilting their rotors. This proof is essentially a control allocation analysis which recovers in a very simple way a result already known: the standard configuration (without tilting the motors) is not fault tolerant.

Donnerstag, 17. September 2015, 13:00 Uhr, Raum C 325 im Curiebau

Alle Interessenten sind herzlich eingeladen.

Ilmenau, 11. September 2015

Die Hochschullehrer des Institutes