Dipartimento di Scienze Matematiche
Politecnico di Torino

Colloquium

Il giorno giovedì 18 ottobre, alle ore 14.30 in Aula Buzano, il Professor

Jean Michel Coron

dell'Institut Universitaire de France, terrà la conferenza dal titolo

Stabilization of control systems

Abstract. One can understand the stabilization problem with the classical experiment of an upturned broomstick on the tip of one's finger. In principle if the broomstick is vertical with a vanishing speed, it should remain at the vertical (with a vanishing speed). As one sees experimentally, this is not the case in practice: if we do nothing the broomstick is going to fall down. This is because the equilibrium is unstable. In order to avoid the fall down, one moves the finger in a suitable way in order to stabilize this unstable equilibrium. This motion of the finger is a feedback: it depends on the position (and the speed) of the broomstick. One can see the usefulness of this information (position and speed) by trying to do the experiment with closed eyes: it is much more difficult (and dangerous). At the industrial level the first famous stabilizer is the Watt's regulator which was used to regulate the velocity of steam engines around a desired value. Feedback laws are now used in many industries and even in everyday life (e.g. thermostatic faucets). We shall give some short historical comments and present some recent results on the stabilization problem.