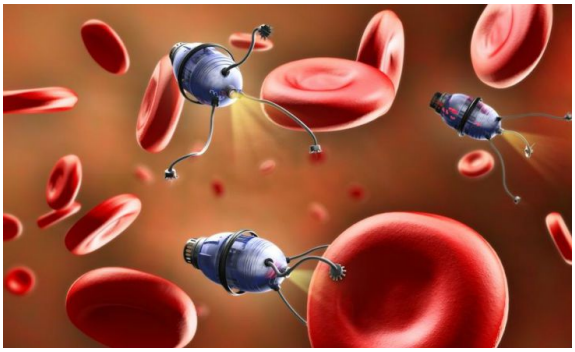
# ANNIVERSARY CONFERENCE: 60th YEARS OF MATHEMATICS

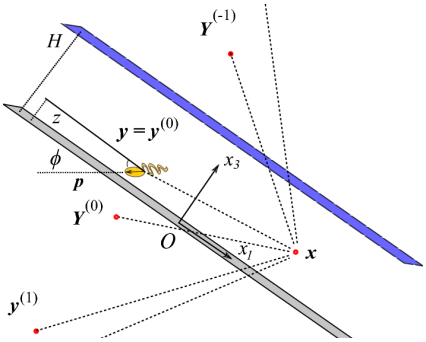
# CONTROL OF A MAGNETIZED MICROSWIMMER

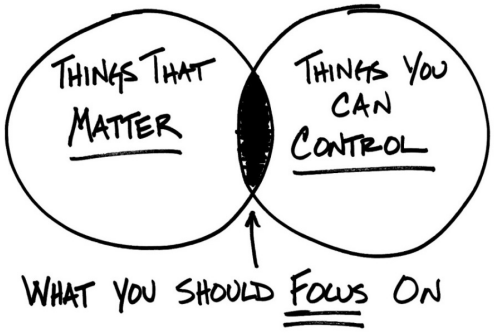
## University of Craiova, November 8, 2019



### ABOUT MICROSWIMMERS

- Swimming is the ability of moving in a fluid with suitable body deformation.
- At microscale, many organisms are able to swim (bacterias, helical chiral swimmers, flexible body swimmers, biological robots, and chemical propellers).
- Medical applications: drug delivery, minimized invasive microchirurgical operations.
- We consider one "non-intrusive" method: magnetized robot that deforms itself under the application of an exterior magnetic field.




### PLENARY SPEAKER


## Pierre Lissy

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### ABSTRACT


We consider a 2 or 3-link magnetic microswimmer which consists of three rigid magnetized segments connected by two torsional springs. By acting on it with an external magnetic field, the swimmer twists and moves through the surrounding fluid. Choosing adequalty the external magnetic field, we prove some local controllability results, meaning that we are able to drive the microswimmer locally from one configuration to another close configuration. We notably prove that we need to provide a sufficient ammount of energy in the system even if the displacement is very small.


### ORGANIZERS

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**Location: Craiova, November 8, 2019, 17:00 - The University House**

### CONTACT


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