

Department of Mathematics and Computer Science

Friday, April 11, 2014, 4:00

COLLOQUIUM TALK

Speaker: Anabela Maia
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Old Main 2231

The Mathematics Behind the Biology of Aquatic Locomotion

Abstract:

Fish swimming has piqued the interest of scientists for centuries. In the last decade, with technological advances, such as increasingly powerful computers that have made computational flow dynamics (CFD) possible or applications such as particle image velocimetry (PIV) which enables flow visualization, studies in fish swimming have been able to answer increasingly complex questions. More and more the need of powerful and interdisciplinary approaches that use mathematics and physics are essential to understand biological processes. Here, I present my research on fish swimming, especially on the role of fins as foils during steady swimming and maneuvering in sharks, swimming in turbulence and perturbations in bluegill sunfish and feeding kinematics of skates and rays. I also explore how modeling biological processes such as suction feeding in bass and bluegill sunfish and prehensile structures of seahorses can contribute to test biological hypotheses. Lastly, I will show how these results are being integrated into new robotics and bioinspiration solutions.

SNACKS IN FACULTY LOUNGE AT 3:30 PM.
EVERYONE WELCOME (EVEN IF YOU ARE UNABLE TO ATTEND THE TALK)
