Numerical Simulations Of Flagellated Micro-Swimmers[1] CECILIA
RORAI, ANTON MARKESTEIJN, Queen Mary University of London, MIHAIL
ZAITSTEV, Moscow Institute for Nuclear Safety, Moscow, Russia, SERGEY
KARABASOV, Queen Mary University of London — We study flagellated mi-
croswimmers locomotion by representing the entire swimmer body. We discuss and
contrast the accuracy and computational cost of different numerical approaches in-
cluding the Resistive Force Theory, the Regularized Stokeslet Method and the Finite
Element Method. We focus on how the accuracy of the methods in reproducing the
swimming trajectories, velocities and flow field, compares to the sensitivity of these
quantities to certain physical parameters, such as the body shape and the location of
the center of mass. We discuss the opportunity and physical relevance of retaining
inertia in our models. Finally, we present some preliminary results toward collective
motion simulations.

Cecilia Rorai
Queen Mary University of London