**Modeling and numerical simulations of 3D flows past self pro-
pelled fishes** MICHEL BERGMANN, INRIA Bordeaux Sud Ouest, ANGELO
IOLLO, Institut de Mathématiques de Bordeaux — Modeling and simulation of
three-dimensional flows past deformable bodies are considered. The incompressible
Navier-Stokes equations are discretized in space onto a fixed cartesian mesh. The
displacement of self propelled deformable objects through the fluid is computed from
the Newton's laws (forces and torques computation) and is taken into account using
a penalisation method. The interface between the solid and the fluid is tracked using
a level-set description so that it is possible to simulate several bodies freely evolving
in the fluid. The application considered is fish-like swimming . Fish maneuvers
and propulsion efficiency for different swimming modes for a single fish or for a fish
school are investigated.

Michel Bergmann
INRIA Bordeaux Sud Ouest

Date submitted: 12 Aug 2010   Electronic form version 1.4