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Numerical Study of Seal Whisker Vibrations GABRIEL WEYMOUTH, Singapore MIT Alliance for Research and Technology, MICHAEL TRIANTAFYLLOU, Massachusetts Institute of Technology — Harbor seal whiskers are thought to play an active role in the identification and tracking of wakes left by potential prey. Further, it is believed that the whisker's geometry enhances it's effectiveness as a sensor on the moving seal by minimizing self-induced fluid/structure excitations. In this study multiple test sections are simulated with an immersed-boundary numerical method at Re=500 to determine the geometry's influence on lift, drag, and wake structures in a fixed configuration. The results confirm findings that the whisker geometry is responsible for order of magnitude reductions in the lift force on the whisker and show that the whisker diminishes the strength of organized flow structures in the wake. Furthermore, prescribed, self-induced, and upstream-flow-induced vibration tests are preformed to asses if the fixed configuration results of the whisker morphology translate to increased effectiveness for wake detection.

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