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Numerical simulation of a plunging flexible hydrofoil and its experimental validation[1] TAO YANG, LEONARDO MARTIN-ALARCON, MINGJUN WEI, FANGJUN SHU, New Mexico State University — A monolithic approach for simulation of flexible flapping wings in fully-coupled motion has recently been developed. The methodology is based on a uniform description of fluid and structure in Eulerian framework. Immersed boundary technique is used to represent solid stress, solid-fluid interface, and active flapping motion in an overall Cartesian coordinate. In the current presentation, the focus is to apply the method on a simple two-dimensional problem of plunging flexible hydrofoil and then compare to the experimental results for validation. The three-dimensional results and experimental validations will also be discussed.

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