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NUMERICAL SIMULATION OF THE FLUID STRUCTURE INTERACTION OF A PARTIALLY SUBMERGED BODY

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Abstract. The marine energy stored in waves, also known as wave energy, is due to the action exerted by the wind on the surface of the sea and that generates ripples on the surface of the water itself. Among the equipment that converts energy, WEC devices stand out, converting wave energy into electrical energy. The simplest WEC equipment are buoys, which move as a result of the incident waves and attached to them is a linear generation system. In this work, the modeling of the fluid-structure interaction of a partially submerged buoy is described. The buoy is modeled as a rigid body with 6 degrees of freedom, floating freely. The rigid body model is made with the "prtclsys" library and the fluid model with the Code-Saturne finite volume package (FVM), using the Volume Of Fluid (VOF) module. The interaction between both is done with an explicit partitioning scheme, using a predictor for the position of the rigid body. Results of the numerical simulation of the interaction of the buoy under different types of excitation are presented.