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Modeling and Simulation of Underwater Flexible Manipulator as Raleigh Beam Using Bond Graph

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Abstract : This paper presents modeling and simulation of flexible robot in an underwater environment. The underwater environment completely contrasts with ground or space environment. The robot in an underwater situation is subjected to various dynamic forces like buoyancy forces, hydrostatic and hydrodynamic forces. The underwater robot is modeled as Rayleigh beam. The developed model further allows estimating the deflection of tip in two directions. The complete dynamics of the underwater robot is analyzed, which is the main focus of this investigation. The control of robot trajectory is not discussed in this paper. Simulation is performed using Symbol Shakti software.

Keywords : bond graph modeling, dynamics. modeling, rayleigh beam, underwater robot
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