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Title: Study of Power Augmented Ram Vehicles

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Authors: Konstantin Matveev

Contact: matveev@wsu.edu

Abstract: Power Augmented Ram Vehicle is an innovative type of air-assisted fast amphibious transport platform. This craft operates in ground effect and employs propulsor jets for partial or complete support of the vehicle weight. The present paper reviews recent experiments and modeling studies aimed at aero-hydrodynamics phenomena. Representative results of our previous work with static platforms are shown here for (i) recovered thrust and lift of scaled models on both solid and water surfaces, (ii) potential flow theory for air jets with inclusion of effects of the water surface deformation and friction forces, and (iii) pressure distribution under a platform. New results in this paper are presented for (i) front flap augmentation of platform lift, (ii) speed tests of a radio-controlled model on various surfaces, and (iii) viscous simulations of forward-speed motion of a propulsor-platform system. Overall, a progress has been made toward better understanding of aero-hydrodynamics of jet-augmented fast amphibious platforms.

Keywords: Power Augmented Ram, amphibious craft, ground effect, scaled models, CFD