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Hydrodynamic characteristics for flow around wavy wings[1] MI JEONG KIM, Department of Naval Architecture and Ocean Engineering, Pusan National University, HYUN SIK YOON, Global core research center for ships and offshore plants, Pusan National University — The present study numerically investigates the effect of the wavy leading edge on the flow of rectangular wings with the low aspect ratio of 1.5 in wide range of the angle of attack ($0° \leq \alpha \leq 40°$) at one Reynolds number of 10^6. Five different wave amplitudes of 0.01C, 0.02C, 0.03C, 0.04C and 0.05C at fixed wavy length of S/8 have been considered, where C and S are the mean chord length of the wing and the span length, respectively. The stall angle is dependent on the wave amplitude. The smallest wave amplitude of 0.1C among the wave amplitudes considered in this study and the smooth wing revealed the similar variation of lift coefficient C_L according to α, resulting in the same stall angle of 20° where the maximum lift appears. As the wave amplitude increases from 0.01C to 0.02C, the stall angle became smaller as α=18°. When the wave amplitudes are 0.03C and 0.04C, the stall angle keeps maintaining with the same value of a =0.02C. When the wave amplitude is 0.05C which is the largest one among the wave amplitudes considered in this study, the earliest onset of the stall has been presented at α=16°. In the post-stall region, C_L for all of the wavy cases recovered and became almost the same as the smooth wing.

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