عنوان مقاله:
Aerodynamic and RSM Analysis of Wingsuit Stability

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نویسندگان:
M. Nazemian Alaei - *Faculty of Mechanical Engineering, Semnan University, Semnan, Iran*

M. S. Valipour - *Faculty of Mechanical Engineering, Semnan University, Semnan, Iran*

خلاصه مقاله:
A Wingsuit is a Skydiving Jumpsuit that generates more lift for longer flights. This study examined the effects of side slip angles on a beginner wingsuit at ۱۰۶ Reynolds number. Experimental tests were determined by using the length of the model scale at angles of attack ranging from ۰° to ۴۰° and sideslip angles of up to ۲۰°. Force and moment coefficients were analyzed using variations in angles of attack and sideslip. Despite the absence of significant effects of sideslip angles on the lift and drag coefficients, side force and rolling/yawing moments were highly nonlinear. Flow structure visualization and numerical simulation show that surface stalls only occur on the lower side when slip angles are lower. In individual aviation sports, wingsuits are more advantageous when they have less sideslip. With Tuft visualization on the wingsuit model, the best aerodynamic coefficient under different flight conditions was determined by comparing the Response Surface Methodology performance under different flight conditions.

کلمات کلیدی:
Wingsuit, Lateral Stability, Response surface methodology (RSM), Tuft flow visualization