

Abstract Submitted  
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**Wing Rock Motion and its Flow Mechanism over a Chined-Body Configuration**<sup>1</sup> YANKUI WANG<sup>2</sup>, QIAN LI<sup>3</sup>, WEI SHI<sup>4</sup>, BeiHang University — Wing rock motion is one kind of uncommanded oscillation around the body axis over the most of the aircraft at enough high angle of attack and has a strong threat to the flight safety. The purpose of this paper is to investigate the wing rock motion over a typical body-wing configuration with a chined fuselage at fixed angle of attack firstly and four kinds of wing rock motion are revealed based on the flow phenomena, namely non-oscillation, lateral deflection, limit-cycle oscillation and irregular oscillation. Simultaneously, some special relationship between the wing rock motion and the flow over the chined body configuration are discussed. In addition, the evolution of wing rock motion and its corresponding flows when the model undergoes pitching up are also given out. All the experiments have been conducted in a low-speed wind tunnel at a Reynolds number of  $1.87 \times 10^5$  and angle of attack from 0deg to 65deg.

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