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Wing-Wake Interactions between Ipsilateral Wings in Dragonfly Flight HAIBO DONG, ZONGXIAN LIANG, Wright State University — Bilateral and ipsilateral wing-wing interactions can be commonly observed in insect flights. As a representative example of ipsilateral wing-wing interaction, dragonflies in flight have been widely studied. An important fact is that the flow over their hindwings is affected by the presence of the forewings. Wake capture and phase-change play very important role on aerodynamic performance of the hindwings We present a direct numerical simulation of a modeled dragonfly (*Aeshna juncea*) in slow flight as studied in Azuma et al (JEB 1985). Realistic morphologies of wing, body, and kinematics are used for maximum including wing and body features of a dragonfly. This work aims to study the relations between wake-topology and aerodynamic performance due to wing-wing and wing-wake interactions of dragonfly ipsilateral wings. DNS results are also compared with Local Momentum Theory (Azuma et al).

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