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Effect of longitudinal ridges on the aerodynamic performance of a leatherback turtle model¹ KYEONGTAE BANG, JOOHA KIM, HEESU KIM, SANG-IM LEE, HAECHEON CHOI, Seoul National University — Leatherback sea turtles (*Dermochelys coriacea*) are known as the fastest swimmer and the deepest diver in the open ocean among marine turtles. Unlike other marine turtles, leatherback sea turtles have five longitudinal ridges on their carapace. To investigate the effect of these longitudinal ridges on the aerodynamic performance of a leatherback turtle model, the experiment is conducted in a wind tunnel at $Re = 1.0 \times 10^5 - 1.4 \times 10^6$ (including that of real leatherback turtle in cruising condition) based on the model length. We measure the drag and lift forces on the leatherback turtle model with and without longitudinal ridges. The presence of longitudinal ridges increases both the lift and drag forces on the model, but increases the lift-to-drag ratio by 15 – 40%. We also measure the velocity field around the model with and without the ridges using particle image velocimetry. More details will be shown in the presentation.

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