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Effect of angle of attack on the flow past a harbor seal vibrissa shaped cylinder[1] HYO JU KIM, HYUN SIK YOON, Pusan National University, Korea — The present study considered the geometric disturbance inspired by a harbor seal vibrissa of which undulated surface structures are known as a detecting device to capture the water movement induced by prey fish. In addition, this vibrissa plays an important role to suppress vortex-induced vibration, which has been reported by the previous researches. The present study aims at finding the effect of the angle of attack (AOA) on flow characteristics around the harbor seal vibrissa shaped cylinder, since the flow direction facing the harbor seal vibrissa with the elliptic shape can be changed during the harbor seal's movements and surrounding conditions. Therefore, we considered a wide range of AOA varying from 0 to 90 degree. We carried out large eddy simulation (LES) to investigate the flow around inclined vibrissa shaped cylinder for the Reynolds number (Re) of 500 based hydraulic diameter of a harbor seal vibrissa shape. For comparison, the flow over the elliptic cylinder was also simulated according to AOA at the same Re. The vortical structures of both vibrissa shaped and elliptic cylinders have been compared to identify the fundamental mechanism making the difference flow quantities.

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