Abstract Submitted for the DFD17 Meeting of The American Physical Society

PIV Study on Flow around Leading-Edge Slat of 30P30N Airfoil RYOSUKE ANDO, YUSAKU ONISHI, JUN SAKAKIBARA, Meiji Univ — We measured flow velocity distribution around leading-edge slat using PIV. Simultaneously, noise measurement using microphone was also performed. A leading-edge slat and main wing model having a chord length of 160 mm was placed in the tunnel with free stream velocity of about 26m/s and chord Reynolds number of 2.8×10^5 . Angle of attack was changed from 4 degrees to 10 degrees at two degree intervals. In this experiment, we investigated the relationship between the unsteady flow condition and the noise. At 4 degrees in the angle of attack, vortices shedding from the slat cusp were moved to the downstream. At 6 degrees or more, flow velocity distributions show that vortices were reattached on the slat lower surface and the flow in the slat cove recirculated. In FFT analysis of noise measurement, at 6 degrees in the angle of attack, there were some peaks on low frequency area and dominant peak on high frequency area was found. At 8 degrees or more, there were also some peaks on low frequency area. But dominant peak on high frequency area disappeared.

> Ryosuke Ando Meiji Univ

Date submitted: 28 Jul 2017

Electronic form version 1.4