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**Cavity noise control using a small obstacle on cavity floor**  
SEIICHIRO IZAWA, HIROYUKI NAKASHIMA, YOICHIRO NISHI, MASAYA SHIGETA, YU FUKUNISHI, Tohoku University — An experimental and numerical study to control the cavity noise using a small two-dimensional rectangular cylinder set on a cavity floor has been carried out. In the experiment, it was found that the cavity noise could be reduced to a background noise level by placing a two-dimensional rectangular cylinder at a proper location of the cavity floor. PIV measurement of the flow inside the cavity indicated that flow was forced to separate by the obstacle, changing the recirculating flow inside the cavity. The numerical simulation of the same flow field revealed that the small bump on the cavity floor introduced a large number of longitudinal vortices which interacted with the main shear layer of the cavity flow. The interaction deformed the spanwise vortices, and hence suppressed the cavity noise.

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