Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Trailing edge noise modification due to edge porosity[1] YOAS ZACHARY, PAUL TRZCINSKI, MICHAEL KRANE, Applied Research Laboratory, Penn State University — It is believed that trailing edge porosity characteristics of large owl wings is the cause of their observed quiet flight. This hypothesis was tested in the ARL Penn State anechoic chamber by measuring sound radiated by the interaction of a vortex ring with a single fixed edge. Both porous and rigid trailing edges were tested. Vortex ring motion was characterized by Schleiren. Typical rings measured 9 mm in diameter, and convected at speeds ranging from 30 m/s to 90 m/s. Rigid and porous edge radiated noise was then compared across this range of vortex ring speeds to show degree of attenuation due to edge porosity.

[1]Acknowledge NSF CBET-1804445

Michael Krane
Applied Research Laboratory, Penn State University

Date submitted: 25 Jul 2019 Electronic form version 1.4