

Project 86



Study on the Use of Broadband Sounds to Mitigate Sleep Disruption due to Aircraft Noise

University of Pennsylvania

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Cost Share Partner(s): DLR

Objective:

Investigate the effectiveness of broadband noise and earplugs to mitigate the sleep-disturbing effects of different kinds of aviation noise.

Project Benefits:

Broadband noise and earplugs are low-cost noise mitigation measures that, if effective and safe, could help protect residents near airports from the sleep-disturbing effects of aircraft noise. We will identify whether – at the same maximum sound pressure level – understudied (helicopter) and emerging (drone, low boom) aviation noise events disturb sleep more or less than jet noise

Research Approach:

Sleep laboratory study in the Chronobiology and Isolation Laboratory in the Hospital of the University of Pennsylvania.

Twenty-four subjects will be investigated in groups of 4 over 7 consecutive nights.

After an adaptation night they will be exposed to – in randomized order - aviation noise alone, with earplugs or with broadband noise at two different levels, which will be compared to a noise-free control night.

Aviation sounds will include helicopter, drone and low sonic boom in addition to jet noise.

Major Accomplishments (to date):

Waiting for project to be awarded.
Have started to prepare IRB submission.

Future Work / Schedule:

Obtain IRB approval (21/1/22)
Purchase equipment and establish procedures (1/1/23)
Select aviation noise events (2/1/23)
Acoustic setup of laboratory (4/1/23)