

## 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

## 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 pink 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.

## 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

## Major Accomplishments (to date):

IRB approval obtained and study registered

Study equipment purchased and tested

Noise event chosen and noise patterns generated

Lab acoustically set up and calibrated

Study procedures finalized and dry run performed

## Future Work / Schedule:

Run first group of subjects in November 2023