The Effect of Firefighter Equipment on PASS Detection

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Motivation

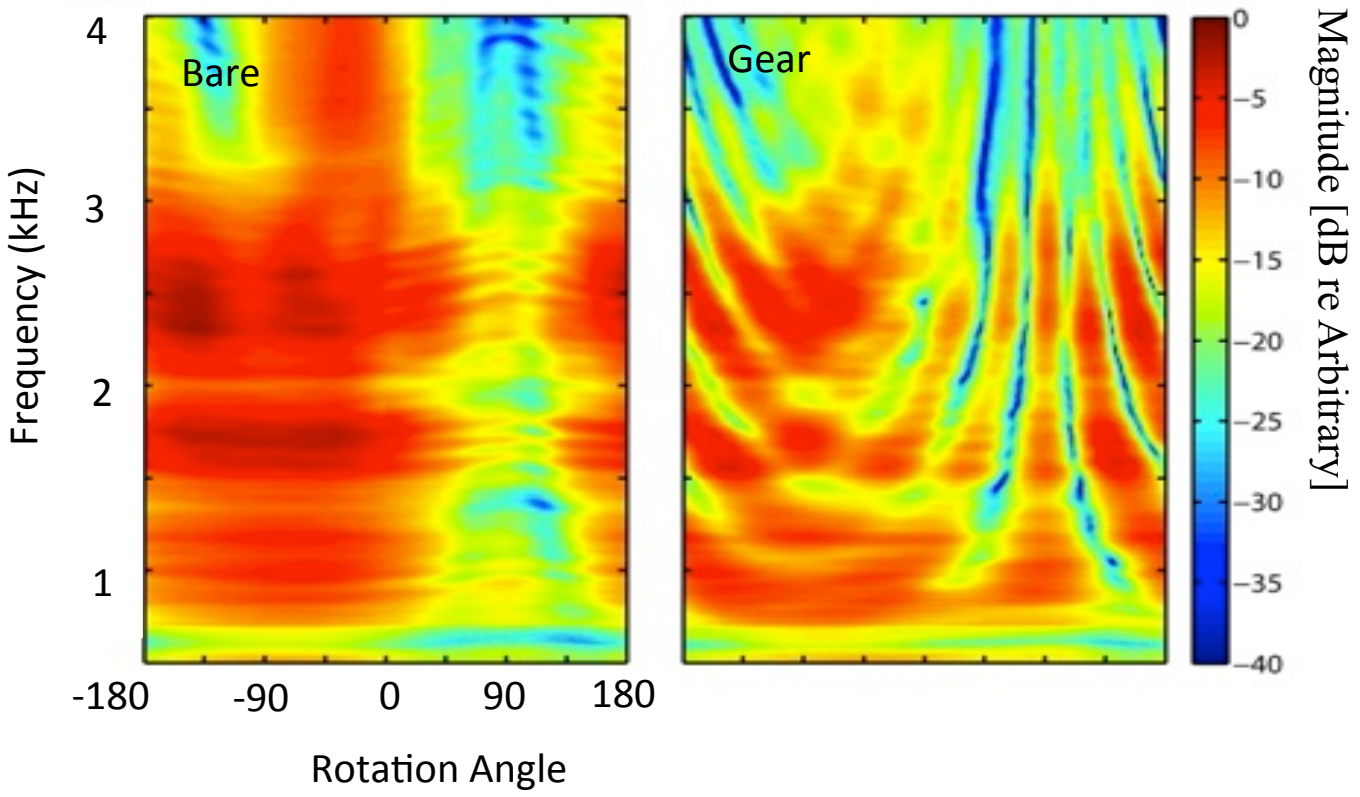
Investigate ways to improve firefighter detection of PASS:

- What would the effect of firefighter protective equipment on firefighter hearing?
- Is the PASS device louder than the other equipment used to fight fires?

Hearing Effects

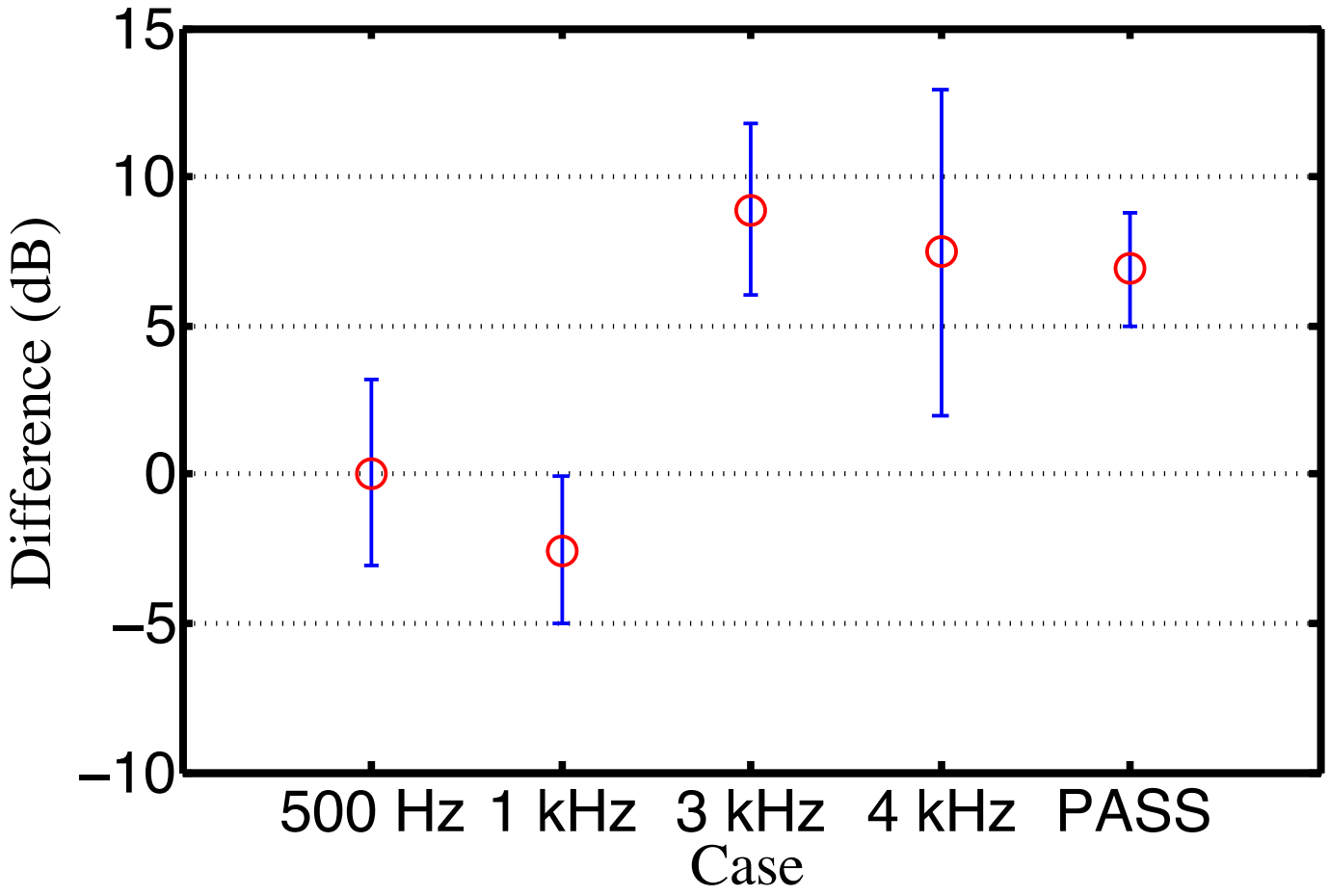
Sound reaching the firefighter's ears is greatly impacted by PPE.

- On average, PPE reduces received level by 3 dB (reduces detection range)
- PPE changes the structure of the received signal (potentially confounds localization)



Hearing Effects

The hearing tests indicated the PPEs reduced the subjects ability to detect PASS by about 8 dB. Approved by IRB.



PASS vs. Background Noise Levels

In nearly all directions, the sound pressure level of noise is as loud or louder than PASS.

Chain Saw

PASS

Fan

Conclusion

- Firefighter personal protective equipment interferes with the signal heard by the firefighter.
- The PASS device is lower in amplitude than most of the equipment used to fight fires.
- These preliminary results indicate that one way to improve PASS is to make it louder.