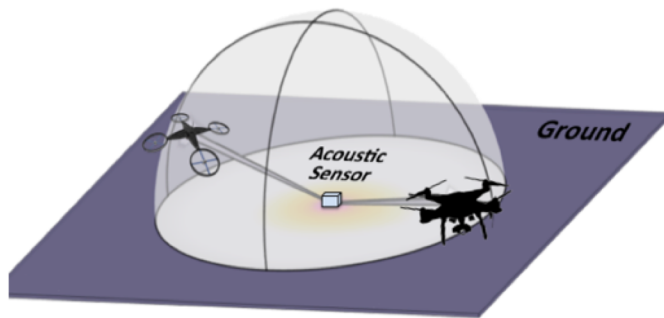
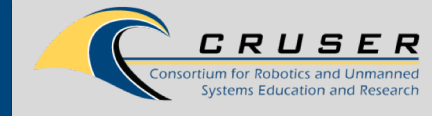


# Bio-inspired MEMS acoustic sensor for small flying UAS localization



*UAS localization concept*

- Using the know-how in MEMS acoustic sensor development by our research group over the years and the available knowledge base within the CRUSER community our approach is:
- (1) A demodulation scheme will be developed for the recent fabricated sensors to allow detection of quiet small flying UAS.
- (2) Co-located multiple sensors will be assembled to provide unambiguous 360 degrees directional response.
- Miniature, low cost, low power consumption, and better performance than conventional directional acoustic systems is expected.

- Miniature MEMS acoustic sensors are very attractive to operate aboard terrestrial or aerial robotic autonomous systems (RAS) or other unmanned platforms (UP) due to their very small size, high performance, low power budget, tunable intrinsic filtering, design flexibility and low cost. When networked they can provide full localization of the acoustic sources of interest.
- By the end of the period of performance, a comprehensive report containing the data collection, sensor readout and demodulation methodologies, angle of arrival retrieval and localization algorithms as well as measured performances of the sensors. Theses of the students will be provided.

- The ability to use distributed miniature acoustic for localization and identification of small flying UAS can positively contribute to the much desired warfare asymmetry.
- The objective of this research project is to continue the development of bio-inspired MEMS directional acoustic sensor for localization of small flying UAS. The proposed investigation will explore suitable demodulation techniques and network means to integrate the sensors in tactical awareness systems, such as ATAK. This multidisciplinary topic involves the participation of several NPS students of different curriculums.



**FY19 Call for Proposals**

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