

Case ID:M16-212P^

Published: 2/26/2020

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A Low-Frequency Magnetic Field Sensing Array for Three Dimensional Imaging

Magnetic field sensing has countless applications ranging from aircraft testing to detection and security applications. However, there are two major dilemmas with current sensors. First, magnetic field sensors have a low sensitivity and are unable to accurately detect failures and defects in low electrical fields. Furthermore, current sensors are only capable of imaging in one dimension. This limits the knowledge one can gain when examining/testing a system. Therefore, there is a demand for a sensor with the ability to image very low frequency electric fields and have the capability to image in all three dimensions simultaneously.

Researchers at ASU have developed the first low frequency field sensing device capable of simultaneously imaging all three magnetic field components. The design works by using inductor and Hall effect sensors, and pre-amplified pixels. These components enable low frequency electrical fields, as small as 0.01 mT, to be detected without distorting the signal to the amplifier, and permits three dimensional capability.

Potential Applications

- Industrial Applications
- Transportation Applications
- Security

Benefits and Advantages

- Lower Weight – Device is small and portable
- Low Energy – Device uses minimal energy while in use
- Scalable – Device can be manufactured to fit system needs

For more information about the inventor(s) and their research, please see

[Dr. David Allee's directory webpage](#)

