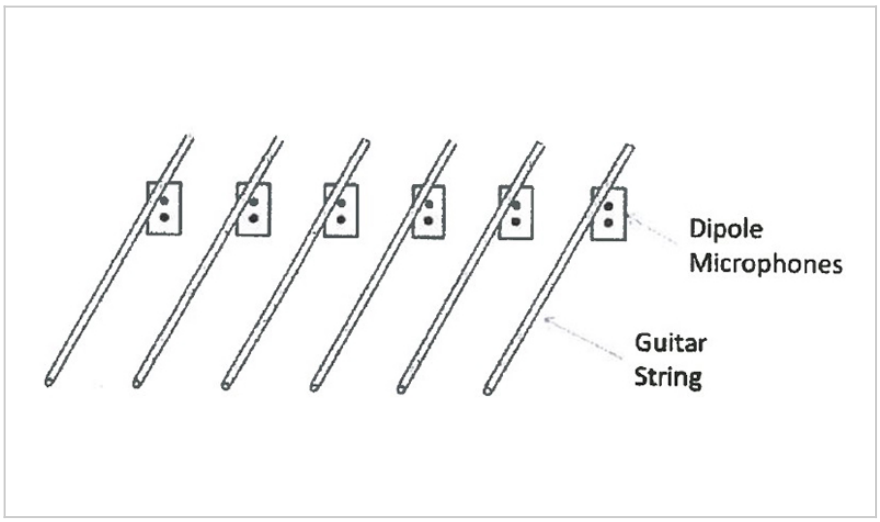
Microphone Array Guitar Transducer

ID# 2012-0889



Dipole microphones for a 6-string guitar

Technology Summary

This technology consists of an acoustic transducer capable of suppressing acoustic feedback from a connected amplifier/loudspeaker while maintaining near perfect frequency response as a means of transducing a true fidelity signal of the acoustical musical instrument (i.e., guitar, although it could be applied to any instrument). The invention applies an array of dipole microphones in very close proximity to the vibrating acoustic guitar strings to both faithfully reproduce the sound one hears while also suppressing uncontrolled acoustic feedback from the amplified guitar signal reproduced by the loudspeaker. The dipole microphone array (DMA) exploits this close proximity to enhance sensitivity to the acoustic waves from the vibrating strings and sound hole of the guitar while suppressing sounds farther away.

Application & Market Utility

Hollow body electric guitars are more sensitive to acoustic feedback than solid body electric guitars because the hollow body vibrates more and this vibration excited the magnetic induction coil and strings more than in a solid body. Filters can be used to mitigate feedback instability, but this also significantly alters the fidelity of the electric signal created by the guitar pickup. This technology eliminates the undesired feedback while maintaining fidelity of the acoustic instrument.

Next Steps

This technology is protected by U.S. Patents 8,884,150 and 9,264,524. The team seeks licensing opportunities.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- dipole
- acoustic guitar
- transducer
- microphone pickup
- feedback cancellation

Researchers

David Swanson
Senior Research Associate and Professor of Acoustics
Online Bio

Originating College
ARL

Office of Technology Management Contact
Rokita, Joseph
jjr152@psu.edu
814-863-6336