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Music and 3D Audio

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ABSTRACT:
The goal of 3D Audio technology is to reproduce, through speakers or headphones, a recording of a complex sound field (e.g. an orchestra, a band, a choir, the sounds in a forest) so realistically that the listener hears the sound sources located in space as they were in real life when the recording was made.

BACCH 3D Sound and BACCH-HP are new technologies developed at Princeton University that have been licensed in commercial products. They reproduce life-like 3D audio through speakers or headphones with high spatial fidelity. I will show how the brain can be tricked into believing that the recorded sound sources are reproduced in 3D space precisely where they were during the recording process. I will describe how these technologies work and discuss how they may influence our perception and enjoyment of music, as well as how composers can use spatial sound as part of music composition. I will also give demos using a 3D audio system to illustrate these new possibilities.

BIOGRAPHY:
Edgar Choueiri is a professor of Applied Physics at Princeton University's Mechanical and Aerospace Engineering Department where he heads both the Electric Propulsion and Plasma Dynamics Laboratory, and the 3D Audio and Applied Acoustics Laboratory. He splits his research time between the two labs where he works on plasma rockets for spacecraft propulsion in one lab, and virtual reality 3D audio and acoustics in the other