Circularly Polarized Wearable Antenna for On-Body Applications ID# 2015-4372



TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- body-area network
- wearable antenna
- metasurface antenna
- circularly polarized antenna

Researchers

Douglas Werner

John L. and Genevieve H. McCain Chair Professor Online Bio

Other Researchers Zhihao Jiang

Originating College

College of Earth and Mineral Sciences

Office of Technology Management Contact

Rokita, Joseph jjr152@psu.edu 814-863-6336

Proposed Antenna Mounted on Human Model

Technology Summary

This technology reveals a conformal solution towards a compact, lightweight, circularly polarized wearable antenna with super robust and highly-efficient performance when mounted on a human body. The antenna is comprised of a linearly polarized ring monopole on top of a truncated metasurface backed by a metallic ground plane. Its overall performance is very well maintained under structural deformation and human body loading, which is far superior to conventional circularly polarized patch antennas.

Application & Market Utility

This antenna provides wide angular coverage, circular polarization, and a compact design while mitigating effects of loading due to proximity to the body. The circular polarization of the radiated wave provides a more robust off-body wireless link for wearable devices to communicate with remote stations. Further, this design offers antenna performance stable across varying degrees of physical deformation, as would occur when being worn on the body.

Next Steps

Seeking research collaboration and licensing opportunities.



Invent Penn State is a Commonwealth-wide initiative to spur economic development, job creation, and student career success. Invent Penn State blends entrepreneurship-focused academic programs, business startup training and incubation, funding for commercialization, and university-community collaborations to facilitate the challenging process of turning research discoveries into valuable products and services that can benefit Pennsylvanians and humankind. Learn more at invent.psu.edu.

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.

