Novel Broadband and High Gain Antenna

VTIP 20-003: “A Broadband, High Gain, End-fed Coaxial Collinear Antenna”

THE CHALLENGE
There are a variety of VHF/UHF communication systems that require an omnidirectional antenna which is low-weight, portable, easy to fabricate, and low cost. A vertical collinear array of dipole antennas is a popular candidate for mobile communication due to its omnidirectional radiation pattern. These are currently used in a wide variety of communications applications, and improved antennas that can achieve data transfer at faster rates and are versatile in setup options are much needed.

OUR SOLUTION
Virginia Tech researchers have invented a wideband high-gain wire mesh coaxial collinear antenna with a stable radiation pattern. The proposed antenna has 3X more bandwidth than classical center-fed antennas while maintaining a stable gain and radiation pattern over a wide frequency band.

Main benefits include:
- Low cost
- Light weight
- High bandwidth
- Stable gain and radiation pattern

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Diagram of center-fed CoCo antenna.

Diagrams of proposed wideband end-fed CoCo antenna: a) Wire mesh and end-feeding structure; b) side view of two sections; c) 3D view.