

## Short Pulse Technologies with Illustrative Applications

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### ABSTRACT:

Parabolic mirrors are useful in radiating impulse-like waveforms. The antenna subsystem consists of a paraboloidal-reflector illuminated by a pair of conical transmission lines. Because of the spherical TEM feed, this antenna is non-dispersive. For an applied fast-rising voltage function, the radiated electric field spectrum is flat over two decades of frequencies. Some fundamental differences between frequency independent antennas (ex: log-periodic dipoles) and the present non-dispersive time-domain antennas will be discussed. Familiar concepts such as antenna gain and radiation pattern need to be redefined for time-domain antennas. Design, fabrication, working principles and performance of this class of antennas are discussed. Such a radiating system has resulted in an emerging technology with many military and civilian applications, some of which will also be discussed.

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### DISTINGUISHED LECTURER:

#### Dr. D. V. Giri

Dr. D. V. Giri is a consultant based in Brooklyn, New York, performing R&D work for the U.S. Govt. and Industry. He is also an Adjunct Professor in the Dept. of ECE, University of New Mexico, Albuquerque. Dr. Giri has over 40 years of experience in the general field of EM theory and its applications in NEMP (Nuclear EM Pulse), HPM (High-Power Microwaves), Lightning, and UWB (Ultra Wideband). Dr. Giri was a Research Associate for the National Research Council at the Air Force Research Laboratory (AFRL), Kirtland AFB, New Mexico, where he conducted research in EMP and other aspects of EM theory. He is a Life Fellow of the IEEE, Member of Commission B, URSI, International Chairman of Commission E, URSI (2104-2017), SUMMA Foundation Fellow, and Recipient of the IEEE Antennas and Propagation Society's 2006 John Kraus Antenna Award. He has authored two books: High-Power Microwave Systems and Effects published by Taylor and Francis in 1994 and High-Power EM Radiators: Nonlethal Weapons and Other Applications published by Harvard University Press in 2004. He co-authored the book High-Power Radio Frequency Effects on Electronic Systems, published by Artech House in 2020. He is a recipient of the 2017 Carl Baum Medal. He obtained the B.Sc., Mysore University, India, (1964), B.E., M.E., Indian Institute of Science, (1967) (1969), M.S., Ph.D., Harvard University, (1973) (1975), Certificate, Harvard Introduction to Business Program, (1981).