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Stand-Alone Pulsed Power Generator for HPM Generation

Abstract

A self-contained, explosively-driven, high-power microwave system, HPM, has been developed at Texas Tech University. The challenges in developing and designing a 5 GW standalone pulsed power generator for driving a >100 MW HPM source are discussed. Both, applied physics aspects of operating principles, and limits of the individual sub-systems will be addressed. The energy, initially provided through a set of lithium-ion batteries internal to the generator, is boosted by an explosively driven flux compressor, FC, and inductively stored at a several kJ level. While the energy is stored on a microsecond timescale, it is released into the load on a nanosecond timescale via an electro-explosive fuse, EEF, thus delivering GWs of electrical power to the HPM source for a duration of about 100 ns.

Speaker Bio

CHARLIE ANDERSON is a recent graduate from Texas Tech University, with a Master's of Science in Electrical Engineering. His thesis work was focused on the development of a high power microwave source using explosive flux compression generators as sources. He is currently employed as a Pulsed Power Engineer by Lawrence Livermore National Laboratory. He and his colleagues are currently conducting large scale high-explosively driven pulsed power experiments. Charlie is currently serving in his second year as the Chair for NPSS-OEB chapter and has been a member of IEEE since 2008.