

Electric Pulse High Beam Module



Overview

This paper presents a novel high-voltage pulse power generator utilizing a distributed pulser architecture. It combines gallium nitride (GaN) transistors in a Marx topology with an inductive adder, achieving nanosecond-scale switching speeds and high-power efficiency. This article is a revised and expanded version of a paper entitled “A 50 KV Pulse Generator for Fast Kickers”, which was presented at the 15th International Particle Accelerator Conference (IPAC24), Nashville, TN, USA, 19–24 May 2024. Beam injection systems in hadron colliders require kickers. As a core part, the performance of a high-current electron beam source is inevitably essential for high-power sources and accelerators. The substantial increase in UHDR beam current poses serious challenges for conventional active dosimeters.

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In this paper, a floating voltage pulse power supply has been designed and analyzed for the generation of a high current density electron beam from a pseudospark discharge-based electron beam source.



High-current pulsed electron beam sources are the core components of high-power microwave systems. In order to meet the requirements of future applications, one needs to improve ...



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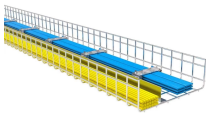
In this study, we fabricate a device that can measure the pulse current for monitoring 6-MeV FLASH electron beams using a PTW-7862 ionization chamber. The capacitor voltage is ...



The added advantage of current transformer-based beam monitoring is the potential for fast (ns-scale) transient readout of the output, permitting accurate quantification of the pulse structure and frequency.



High-performance applications, such as photoinjectors, require e-beam power supply capable of delivering high average current and high voltage. These features ensure the generation of ...



In this paper, a pulse generator based on the combination of the Blumlein pulse forming line and the boost method is proposed.



This article describes the electrical design of BPFL for delivering a 500 kV, having 60 ns pulse-width single shot high energy electric pulse, its engineering design, realization and ...



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The details of the high voltage pulse power system to generate the high voltage and high current pulse & electron beam in conjunction with field emission type electron beam gun for HPM generation using ...



Large-scale, well-aligned SiC nano-wires as high-current, pulsed electron beam emitters are explored. They show an superior advantage on cathode lifetime and emission quality.

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