



Contribution ID: 189

Type: **Poster**

Design of Trigger System for Large LTD Facility

Monday, 19 June 2017 13:30 (1h 30m)

High current facilities have been used for a wide variety of HEDP experiments, such as fusion energy, radiation-physics, equation-of-state, plasma-physics and astrophysics etc. Linear transformer driver (LTD) is a new technical approach that can deliver fast high current and high voltage pulses with very compact devices. One of the most difficult technical problems encountered in building large LTD facilities is that there so many switches to trigger. So the trigger system is critical. This paper presents a new technical scheme for large trigger system that based on two kinds of trigger unit (fore stage-trigger-unit and post-stage-trigger-unit). Two kinds of trigger units based on the same pulse forming scheme, in which many ceramic capacitors form a compact coaxial structure that can minimize inductance and output fast pulse. The fore-stage-trigger-unit using a laser triggered gas switch while the post-stage-trigger-unit using a electric triggered gas switch. detailed design and preliminary experimental results are presented.

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Session Classification: Poster session I - Pulsed Power Physics and Technology, Components and HV Insulation

Track Classification: Pulsed Power Physics and Technology, Components and HV Insulation