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Design and testing of a compact low impedance Marx generator with quasi rectangular pulse

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A compact low impedance Marx generator was designed and tested. The generator consists of twelve stages and each stage utilizes two 18 nF 100 kV capacitors and four 1 nF 100 kV capacitors. When charged to the rated voltage of the capacitors the energy density of the complete generator is 15J/L. In the Marx generator different discharge periods form the capacitors added to the main circuit and quasi-rectangular pulse was formed. The Marx generator was designed to provide a pulse with fast rise time of less than 25ns, the full-width at half-maximum (FWHM) of 100ns and width at 95% maximum in excess of 50ns. The generator can deliver in excess of 30kA at 500kV to the load. This presentation details the electrical and mechanical design of the generator. Initial characterization of the output at various voltages and various loads of different impendance also been presented in this paper.

Author: LIU, Hongwei (Institute of Fluid Physics)

Co-authors: Dr YUAN, Jianqiang (Key Laboratory of Pulsed Power, Institute of Fluid Physics, CAEP); Ms JIANG, Ping (Key Laboratory of Pulsed Power, Institute of Fluid Physics, CAEP); Prof. XIE, Weiping (Key Laboratory of Pulsed Power, Institute of Fluid Physics, CAEP); Dr MA, Xun (Key Laboratory of Pulsed Power, Institute of Fluid Physics, CAEP)

Presenter: LIU, Hongwei (Institute of Fluid Physics)

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