

عنوان مقاله:

Application of a Cascaded Helical Flux Compression Generator for Producing High Magnetic Field in Large Scale Chambers

محل انتشار:

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خلاصه مقاله:

Flux Compression generators (FCGs) are widely used to achieve extremely high power pulses. In this method, after generation of current pulses flowing through an inductor, the chemical energy of an explosive is used to increase the power of the output pulse of generator which is applied to the load. During the transfer of explosive's energy to the output electrical pulse, the critical issue is to achieve the change of the inductance in a fast and controlled way. These types of generators can be utilized to generate intense magnetic fields by applying output current of such generators to an inductor. For large scale chambers (in order of 0.1 m³), this inductor should have large dimensions and high inductance consequently. The current or energy gain of single stage HFCG is strongly dependent on essence of the generator's load. The performance of single stage HFCGs in order to high impedance loads is poor. In this way to obtain acceptable efficiency a double stage (or cascaded) FCG is applied and simulated. In this paper a simple approach is proposed for producing magnetic field with magnitude of over than 10T in chamber within a volume of 0.2 m³

کلمات کلیدی:

Explosive pulsed power, Magnetic field diffusion, Magnetic Flux compression, Large- scale chambers, Cascaded (helical flux compression generators (HFCG

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