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## Multi-pulse Current Source for Highly Inductive Load

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With the low cost, high resolution, good traffic and other characteristics, Helicopter Transient ElectroMagnetic (HTEM) system has gradually become a hot topic of Airborne ElectroMagnetic (AEM) survey. The multi-pulse large magnetic moment transmitting is one of its key technologies. However, a few topologies have been reported in the literature. The high-power multi-pulse current source circuit suitable for HTEM transmitter system is presented in this paper. Through the switch matrix composed by IGBT, the circuit uses the LC resonance principle to achieve the release and recovery of transmitting energy, thus producing the main pulse of the large current and secondary pulse steep edge. The charging circuit is designed with constant power control and soft switching technology to replenish the capacitor energy gap. The formula of the circuit parameters is deduced by the analysis of the circuit working process. In order to evaluate the performance of the proposed circuit topology, the circuit simulation is carried out by using Matlab/Simulink software and a prototype circuit is built. The results show that the proposed circuit can realize multi-pulse current waveform output under inductive load, and it has the characteristics of simple structure and flexible control.

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