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# sub-microsecond Pulse Generators Based on Magnetic Pulse Compression System

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Magnetic Pulse Compression (MPC) system is an important and efficient method to obtain high repetition rate and high voltage output. Novel MPC system which do not contain external demagnetization circuits have broadened the appliance of MPC systems. The novel MPC system mainly use magnetic switches to compress the pulse width. For improving the compression efficiency, we use both saturable pulse transformers and magnetic switches to compress the pulse width and amplify the voltage output as well. An 2n stage MPC based on the improved MPC topology is presented. The 2n stage MPC consists of 2n compress units, a freewheeling diode or an inductor to reduce the pre-pulse occurred in the load, and a resistive load. To meet the high voltage and compression gain and considering the overall system efficiency, we designed two kinds of most popular MPC system based on the improved MPC topology, which is 2-stage MPC system and 3-stage MPC system. Based on the improved MPC topology, several kinds of compact pulse generators are build in our laboratory. We named these pulse generators as MPC-AAAL(D) series. AAA means the highest voltage output in kV. Post fix L or D means the resistive load paralleled with an inductor or a freewheeling diode, respectively. These generators illustrate the improved MPC topology together with solid state switch provides an ideal way to generate pulses of around 100 nano-seconds in width with mid and high voltage of 5kV to 120kV, and the highest repetition frequency of about 20 kHz.

**Author:** Mr ZHANG, Dongdong (Institute of Electrical Engineering, Chinese Academy of Sciences)

**Co-authors:** Mrs YAN, Ping (Institute of Electrical Engineering, Chinese Academy of Sciences); Mrs ZHOU, Yuan (Automation and Electrical Engineering College, Tianjin University of Technology and Education)

**Presenter:** Mr ZHANG, Dongdong (Institute of Electrical Engineering, Chinese Academy of Sciences)

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