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## A pulser R&D for the HEPS booster bumper magnet

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The High Energy Photon Source (HEPS) is a fourth generation photon source, including a storage ring, a booster ring and a Linac. Due to the small dynamic aperture of the storage ring, a novel on-axis swap-out injection scheme was chosen. Here, the 6GeV booster acts as an accumulating ring during that injection process. To extract 6 GeV beam from the booster before injection into the storage ring, four slow bumper magnets are applied to assist the extraction kicker to accomplish. The bumper pulse magnetic field waveform is a half-sine wave with 1ms pulse bottom width. Depending on the simulation and test, a classic LC resonance circuit topology with IGBT switching in series with fast recovery diodes is adopted. In addition, an energy recycle circuit and capacitor charging circuit are designed, to decrease power loss and reduce the influence on the output pulse current waveform during the capacitor re-charge process. A pulsed power supply prototype has been completed, and the testing results show that the bumper pulser can fully meet the all requirements of HEPS booster high energy extraction system.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

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