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Injection kicker for HESR using semiconductor switches.

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The High Energy Storage Ring (HESR) for Antiprotons is going to be built at FAIR in Darmstadt on the extended GSI campus.
Charged particle (including protons and antiprotons) of 13 Tm magnetic rigidity will be injected into this synchrotron and storage ring. The injection system of the HESR ring is based on 4 UHV 360 mm long ferrite kickers, each kicker having to generate à 25 T.mm integral field, during 500 ns, with rise time and fall time lower than 220 ns. Each kicker is supplied by a 4000A / 40 kV pulser, based on Blumlein topology, with semi-conductor switches. A prototype of the pulser, using water lines instead of conventional coaxial cables, has been developed to feed the UHV kicker. Electric and magnetic measurements are presented, as well as magnetic transient modelling.

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