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Measurement of low-frequency magnetic pulses from negative stepped leaders in rocket-triggered lightning flashes
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We report the measurement of magnetic pulses from the negative stepped leaders in positive rocket-triggered lightning flashes with the low-frequency (4 kHz to 420 kHz) magnetic sensor at two different distances (78 m and 970 m, respectively) during the SHantong Artificial Triggered Lightning Experiments (SHATLE) during summer of 2015. Different from the magnetic radiation from positive leaders as observed in the considerably more frequent cases, the impulsive signals from the negative leader sustain for a much longer time interval, while the attenuation of current pulse launched by the stepping of leader is also observed. The general pattern of magnetic pulses observed for the negative stepped leader is different from the positive counterpart. Also, the initial negative leader appears to be brighter than the positive ones, as shown by both high-speed video observation and the magnetic measurement.