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Status of permanent magnet Intense Proton Source for C-ADS Linac

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Two compact and intense 2.45GHz permanent proton sources and their corresponding low energy beam transport systems (LEBT) were developed successfully for China Accelerator Driven Sub-Critical system (C-ADS) in 2014, one of which were built at IMP, Lanzhou and the other at IHEP, Beijing. Both proton sources can deliver stable 10mA/35keV proton beams at CW mode to the entrances of the downstream RFQs. The beams extracted by a 3-electrode extraction system are transported by the low energy beam transport system (LEBT), which is composed of 2 identical solenoids, and into the 3.2MeV or 2.1MeV radio-frequency quadrupole (RFQ). In order to ensure superconducting cavities commissioning and protection, an electrostatic-chopper has been designed and installed in the LEBT line that can chop the cw beam into a pulsed one. The achieved fall/rise time of the chopper is less than 20 ns. The performance of the proton source and the LEBT, such as beam reliability, beam profile, emittance and RFQ injector matching will be presented.