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DAFNE BTF improvements of the transverse beam diagnostics

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The DAFNE BTF (beam-test facility) can provide electrons and positrons, tuning at runtime different beam parameters: energy (from about 50 MeV up to 750 MeV for e- and 540 MeV for e+), intensity (from single particle up to 1010/bunch) and pulse length (in the range 1.5–40 ns) up to 49 Hz, depending on the operations of the DAFNE collider.

The beam spot and divergence can be adjusted, down to sub-mm sizes and 2 mrad (downstream of the vacuum beam-pipe exit window), matching the user needs.

We describe of the BTF beam transverse monitor systems based on FitPIX detectors, operating in bus synchronization mode externally timed to the BTF beam. We also describe our custom software allowing the acquisition and synchronization of the beam diagnostics with the users data, using TCP/IP calls to MEMCACHED.

The performance of the system in a variety of beam intensity, energy and focussing conditions is reported.

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