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A nanosecond pulse technology for injection/extraction systems

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The emittances of the injected and extracted beams, the structure of the bunch train, and the repetition rate are critical parameters of the damping ring, which indirectly determine the luminosity of future colliders. Injection and extraction systems are one of the main components of damping rings. A pulse kicker in tandem with a DC septum magnet controls the bunch orbit in these systems. The duration of the kicker pulse should be several times shorter than the time between adjacent bunches. The time between neighbor bunches is in a nanosecond range. Kickers must have a rise/fall power rate of MW per nanosecond for many modern collider designs. The technical aspects and experiments with the kicker pulsers will be discussed.

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