

# Summary re CLIC Pre-Damping and Damping Ring Kickers: Stability Requirements

1. Beam coupling impedance issues will require the use of striplines, rather than a ferrite loaded kicker magnet;
2. Short duration pulses (fast rise and fall) are advantageous for minimizing the total duration of the pulse. Hence a multi-cell inductive adder may be a good choice to:
  - Minimize dissipation in terminators (and therefore thermal effects);
  - Achieve reliable insulation, especially at ends of striplines, and adequately low beam coupling impedance of striplines – **R&D required**;
3. Stability of DR extraction kicker (0.015% reqd.) will be a significant challenge especially because of relatively long (160ns) pulse length. The following require **R&D**;
  - Power supply – probably OK for slow charging;
  - Choice between PFL & alternative (e.g. inductive adder);
  - Switch;
  - Transmission cable;
  - Feedthroughs;
  - Striplines;
  - Terminator.
4. A double kicker system relaxes the requirements for individual kickers, but this has never been tried at CERN. KEK-ATF achieved a factor of 3.3 reduction in kick jitter angle, w.r.t. a single kicker: the fact that the gain was not even greater is attributed to errors in the optics and errors in estimating horizontal displacement (due to insufficient position resolution of the BPMs) – can this be improved upon? – **R&D required**.