NLC Damping Ring Kicker

- Impedance problem with SLAC SLC damping ring kickers
- Reliability / radiation related failures of ceramic/epoxy
- Kick/length reduced

Recent effort

<table>
<thead>
<tr>
<th></th>
<th>Strength (G)</th>
<th>Rise/fall (ns)</th>
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</thead>
<tbody>
<tr>
<td>SLC DR</td>
<td>375</td>
<td>60</td>
</tr>
<tr>
<td>MDR</td>
<td>140</td>
<td>60</td>
</tr>
<tr>
<td>PPDR</td>
<td>308</td>
<td>100</td>
</tr>
</tbody>
</table>

- metal design
- solid state pulser
Dortmund - DELTA - kicker (Wille)
NLC DR Shorted-Stripline Kicker
Stripline Main Damping Ring
Kicker Cross-section showing field lines
Field non-uniformity
Field non-uniformity compensation
6 stage IGBT Pulser
6.6kV - 400A IGBT
25kV/1000A pulse
190 ns long
40ns rise / fall time
IGBT Kicker Pulser - section

Rise time from IGBT switch-off

5kV 100W PS in
IGBT Pulser Model
IGBT - cut open