Triplets Move.

by Marty Breidenbach
Future SLC

- See note by Clendenin et al…
- Move triplets in 70 cm
  - \(\downarrow\) backgrounds \(\rightarrow\) \(\uparrow\) divergences
- Linac to FF Feedforward to correct orbit jitter
- Higher polarization with new photocathodes (85+\%)
- Improved emittances
  - Further softening of FF bends
  - P.S for RTL tuning, optics
  - DR RF frequency shifts \(\downarrow T_d\)
  - Misc. tuning, optics
- PEPII compatible linac lattice has been developed, 15-20\% impact.
Caveat

- No improvements have been approved by SLAC!
- Not to SLC
- Not to SLD
- Not a one
Triplet Move

• Move triplet forward by
  – adding steel extension between carriage and cryostat
  – extending cryogenic service plumbing ("elephant trunk")
  – shuffle beamline components
  – move luminosity monitor electronics
SLC Triplet Focus Upgrade and LUM

Triplet move toward IP occupies LUM electronics region.

Two options for LUM:

1. Move present electronics.
   - Present (LAC) electronics works!
   - Would require 4-5 m cable run from silicon to preamps.
   - Not unreasonable:
     > LAC uses up to 4 m cable runs.
     > Electronics uses 4μs shaping time.

2. Build new electronics, perhaps on/near triplet.
   - Could use modern technology for small footprint.
   - 512 → 448 channels per side
   - 15 →≈ 12 bits OK

⇒ Plan: Test longer cables soon.
Feedforward System

• Sector 29-30
  – Use existing BPM’s & cables to feed new signal processors. Probably digitize signals and use to address correction lookup table.

• Send result to CEH
  – Cable or fiber much too slow.
  – Optical link using laser package made for fibers coupled to small telescope
  – Or microwave link using consumer pizza pan technology.
• Drop down penetrations using fast cable.

• Kick is order of 1 microradian…
  – Use stripline BPM1’s available from triplet move.
  – Pulser produces triangular 250 ns waveform, around 20 amps peak.

• Feedback to lookup memory.
Method

- We must enlist the collaboration for a substantial fraction of any upgrade effort. SLAC will have money only for Preventative Maintenance in FY99.
- We should talk at this meeting about possibilities.