“The safest way, the straight and narrow
No confusion, no surprise”

Earth’s Curvature (Himel 3)

PT

WG1

21-Aug-2005

Note: The judgments in this presentation are solely those of the author and do not represent a consensus of WG1.

The Options

- There are 3:
  - Laser straight
  - Piecewise straight with discrete vertical arcs
  - Continually curved
- To some extent the selected site will dictate which of these options are really viable
  - Want to determine degree to which all options are open prior to site selection

Pros/Cons

- Minimum risk: laser straight
  - Most heavily studied
  - Eliminates all vertical dispersion from linac
    - Best for emittance preservation
- Minimum cost: continually curved
  - Laser straight leads to deep excavations
  - Piecewise straight requires extra length
- Technical/Cryogenic: favors ??
- BDS:
  - Would prefer for both sides of BDS to lie in 1 plane
  - Would like expansion room back into linac in BDS plane also

Preliminary Recommendation

- Linac can have any of 3 geometries
  - Limit: only studied curvatures up to Earth's radius (6370 km)
  - Cannot vouch for sharper curvature – would need study prior to site selection!
- BDS must be in a plane
- Last 0.5 km of linac on each side must be in plane with BDS
- Bunch compressor not yet studied

R & D

- More thorough studies of operations and tuning in piecewise straight and curved linac
  - Complete by end 1st Q CY 2006
- Extend study to BC – can it be curved?
  - Complete by end 1st Q CY 2006
- Specific site studies – can the desired curvature for a given site be accommodated?
  - On request of GDE, once sites are picked