

## STRUCTURE THEORY ISSUES

- Look at a three or four structure “super-structure”, with close coupled structures, compact couplers, and combined cut off drift tubes.
- Could go to three 70 cm structures per girder, 2 girders per power source, to reduce power required from SLED 2 by 12%. With binary compression, plenty of power.
- HOM Loads: Inline or brazed on external blocks, which ever has the best combination of good ( $\leq 1.05$  midband) broad band ( $\geq 2$  GHz) match and ease of fabrication. **Don't know how to quantify.**
- Upstream HOM loads: Not required if coupling to manifold is optimized throughout structure, but this may not be compatible with best high power performance. (It might require slots all the way through the disks at downstream end.) HOM loads at input end can be downstream of coupler since first 5 or so cells probably don't need to be coupled to manifold. Wakefield mitigation can be improved for the no load case by varying the position of the manifold shorts from structure to structure. **I think we will probably end up with no HOM loads at the upstream end unless they are very cheap!**
- Rounded or “Leek head” cavities: Negligible difference between these 2 in shunt impedance. Choice will be made on basis of cost or ease of fabrication and whether there is any difference in high power performance. (Possible multipactor problem with Leek head cavities.) Either improves shunt impedance by about 10%. They also should improve concentricity between long range wakes (measured by structure BPM's) and short range wakes which have the tightest position tolerance.