COMPARISON OF PARAMETERS FOR THE LP&HP SPLs

LP SPL

Subject	704 MHz	1408 MHz
Beam Dynamics	**No difficulties anticipated**	**We can expect 9 mA OK (Project X baseline)** **Studies needed, to find if intensity limits exist at 20 mA**
SC cavities : freq. & temp.	**4.5 K or lower but not superfluid** **25 MV/m still needs to be confirmed in prototypes and as a realistic estimate for series production, else we need a longer linac, with directly proportionate overall cost increase etc.**	**At superfluid ILC experience indicates that 25 MV/m is realistic.** **Otherwise find possible gradients at 2K, (gradient < 20MV/m at 4.5K - Campisi)** **BUT probably little interest in 1400 MHz if we do not take existing cryostat !**
SC cavities : nb. of cells etc.	**Fewer cells, simpler construction, but larger SC surface to manufacture**	**9-cell cavity, resonances, cell coupling trapped HOMs a concern.** **- Studies needed** **More complex fabrication, more welds.**
RF hardware	**Klystron 'available'** **Other for LP SPL straightforward.** **Power coupler - Saclay design to test**	**Klystron 'feasible':** **LP SPL can make use of good choice of existing hardware.** **Power coupler: need to test XFEL coupler at higher power**
Cryogenics	**If > 2K (4.5 K) can design a simple cryostat, similar to LHC**	**- Study feasibility of use of ILC cryostat and establish list of modifications needed for 1400 MHz** **- If extensive mods needed we could design simple cryostat to operate above 2K. BUT then might as well stay at 700MHz…**
Other subjects	**Need sizeable infrastructure to test and build. But some help from Saclay.** **Hardware investment.**	**As for 704 MHz. But hopefully can get some support from other labs.** **Hardware investment.** **- Define study packages, form collaborations to resolve above issues**

COMPARISON OF PARAMETERS FOR THE LP&HP SPLs

HP-SPL

Subject	704 MHz	1408 MHz
Beam Dynamics	**Studies needed, to find if there are intensity limits below 40mA** **Do tests with real cavities**	**HOM studies needed, to find intensity limits – high risk they do exist.** **Do tests with real cavities (at 1300MHz) ?**
SC cavities : freq. & temp.	**As LP SPL**	**As LP SPL**
SC cavities : nb. of cells etc.	**As LP SPL**	**As LP SPL**
RF hardware	**Development needed to upgrade components** **Power coupler: Saclay OK for 1MW ?**	**HP SPL would need multiplication of components, rather than 'simple' upgrade to higher rated devices** **Power coupler: To study..**
Cryogenics	**As LP SPL**	**AS LP SPL**
Other subjects	**AS LP SPL**	**As LP SPL**