

MILESTONES - Superconducting Deflecting RF Cavity		
Year 2002		Milestone / Activity
First quarter	Identify issues regarding to the deflecting cavity	Preliminary study of the deflecting RF cavity. Explore all possible options: what frequency? How many cells per cavity? Dispersion relations. Study HOM and LOM and damping of these modes. Collaboration with Fermilab and following their RF separator R&D throughout the whole project.
Second quarter	Cavity design	Multi-cell cavity designs: cavity geometry optimization, Lower order modes and wake fields, damping of the LOM modes if necessary. V_d/H_{max} , V_d/E_{max}
Third quarter	Cavity design (cont'd) with couplers, and start engineering design of a prototype deflecting cavity	Continue cavity design: coupling between cells, field distribution and flatness. Coupler designs for the dipole mode, HOM and LOM modes as well as tuners; Polarization of the dipole modes (how to do it?). Start engineering designs of the multi-cell cavity.
Fourth quarter	Cavity design with couplers and tuners (cont'd) Prototype of the deflecting cavity	Continue the cavity design with couplers and tuners. Finalize the design (need a review!). Order materials and identify company or labs to build the prototype.
Year 2003		Milestone / Activity
First quarter	Manufacturing the prototype and cavity tuning	Single cell cavity tuning starts with the prototype manufacturing
Second quarter	Manufacturing and cavity tuning (cont'd) cavity tuning and field flatness	Manufacturing of the cavity/cavity tuning with couplers and tuners, cavity tuning after e-beam welding: bead-pull measurement, dispersion measurement, HOM and LOM measurements (Qext)
Third quarter	Final cavity tuning, polarization and surface treatment	Final cavity tuning, polarization. Surface treatment: water rinsing and chemical treatments and etc.. Final measurements and assembling in a clean room.
Fourth quarter	High power test of the prototype cavity	Identify where to do the high power test. Purchase rf source? The cavity should be tested in a vertical dewar to minimize efforts and costs of designing and building a cryomodule.
Year 2004		Milestone / Activity
First quarter	Continue high power test	High power test: lots to learn!
Second quarter	2nd Prototype + cryomodule design	Based on what we may learn from the tests of the first prototype, design and build the second prototype. Cryomodule designs, high power test stand at LBNL?
Third quarter	Continue the 2nd prototype work	