

DCH: major decisions for TDR

1. Chamber geometry
 - interplay with the rest of SuperB
2. Cell & gas mixture optimization
 - momentum and dE/dx resolution from benchmark channels
 - cluster counting?
 - backgrounds
 - aging
3. Mechanical structure
 - All in Carbon Fiber
 - Shape of endplates
 - do we need a mock up (e.g. drilling at an angle)
4. Electronics
 - Choice is coupled to backgrounds levels, and PID performance
 - Power & cooling, radiation tolerance, shielding
 - Trigger & DAQ
5. Gas system
 - Reuse BABAR system?

... and required R&D

1. Chamber geometry
 - Interplay with the rest of SuperB - FAST simulation
2. Cell & gas mixture optimization
 - FAST, FULL, Garfield simulation, prototyping
3. Mechanical structure
 - Engineering studies
4. Electronics
 - Electronics engineering required

An accurate estimate of the required manpower to be provided by March 15th

WBS status

WBS	Item
1	DCH (TDR)
1.1	External geometry optimization
1.1.1	Radius of inner cylinder
1.1.2	Length of DCH
1.1.3	Offset of DCH center
1.1.4	Shape of DCH end-plates
1.2	Cell geometry optimization (w/ or w/o cluster counting)
1.2.1	Full simulation bkg occupancy vs. x/y/z
1.2.2	Performance studies (FAST simu)
1.2.2.1	benchmark channels: p resolution
1.2.2.2	benchmark channels: dE/dx resolution
1.2.2.3	stereo vs. stereo+axial
1.2.2.4	optimization of stereo angle
1.2.2.5	optimization of B field?
1.2.3	Garfield/Magboltz studies
1.2.3.1	spatial resolution vs. mixture
1.2.3.2	dE/dx resolution vs. mixture
1.2.4	Tests with prototypes
1.2.4.1	Prototype construction
1.2.4.1.1	Design
1.2.4.1.2	Mechanics
1.2.4.1.3	Stringing
1.2.4.1.4	Electronics
1.2.4.1.5	DAQ
1.2.4.2	Laboratory tests
1.2.4.2.1	Measurement of gas mixture properties
1.2.4.2.2	Space to time relations
1.2.4.2.3	Aging test
1.2.4.2.4	Cosmic Test
1.2.4.2.5	Test Beam
1.3	Mechanical structure
1.3.1	Structure design
1.3.2	Mechanical Integration
1.4	Electronics (w/ or w/o cluster counting)
1.4.1	Architecture
1.4.2	HV distribution
1.4.3	Front-End
1.4.4	Trigger
1.4.5	DAQ
1.5	Gas System
1.5.1	Design

Work in progress...