20 May 2010

Questions to the experiments – Answers from LHCb

(1) What is the relevance of this WP fitting for your experimental program?

WP4: Important in the frame of RD50; Studies of Diamond, Silicon, 3D sensors and guard-rings is fundamental for LHCb.

WP5: LHCb is using GEMs, so generally speaking, this WP is relevant, but see (4)

WP6: QART is certainly relevant and interesting for the LHCb upgrade

WP7: RPCs not relevant, but detector material DB and GIF++ are of general relevance; PS radiation facility is relevant for future tests

WP11: Relevant for LHCb upgrade and replacement. Mobile CO2 units are required (VELO, silicon tracker). Equipment for vacuum qualification of components essential (thermal behaviour, out-gassing etc.)

(2) Are the deliverables expected by end of 2011 meeting your requirements?
   a. If yes, how many of these deliverables should be available and when and what else are you expecting (production, integration, ...)?
   b. If not, what are the extra developments needed and in which time scale?

WP4: We expect the design of radiation hard pixel design with minimal guard-ring at this time. We use extensively the PS irradiation and SPS North Area test-beam facilities.

WP5: no specific requirements

WP6: see (4) below and might be useful from 2011 onwards

WP7: no specific requirements at present, but availability of irradiation facilities will be important for the qualification of e.g. the Upgrade VELO modules

WP11: As already mentioned, we expect a mobile CO2 cooling unit for test purposes such as test beam activities and VELO replacement quality control.

(3) Which resources are you able to inject in that particular project either to reach completion of new requirements or to customise or to integrate? With which time scale?

WP4: The LHCb VELO group is involved in the RD50 project. See question 1+2. A very precise beam telescope for test beam has been provided.

WP5: none for general work, but resources required to do a particular job for LHCb are provided through LHCb collaborating institutes (INFN).

WP6: none for general work, but resources required to do a particular job for LHCb will be added if required (see also (4))

WP7: GIF++: The LHCb muon group is not using the existing GIF facility at present, neither are there precise plans for the use of GIF++ at the moment. Although we will not inject resources at present, we fully support the project and are ready to re-discuss the injection of resources in case the need will arise.

WP11: Not really, the knowledge for CO2 cooling is with NIKHEF/LHCb for the LHCb VELO cooling.

(4) How do you see the long term future (beyond 2011) of this WP ? (e.g. extension, reduction, re-focus, conversion to service, absorption in experiment specific upgrade projects, …).

WP4: The VELO upgrade is expected for 2016. After 2011, once the design has been settled and first production is available, radiation tests have to be continued and qualification of design and product is mandatory.

WP5: At present LHCb has no plans for using additional GEM chambers for the detector upgrade.

WP6: This activity should become a service with fractional manpower allocated to keep and improve know-how of this activity, however, for specific and volume test activities the resources should come from or be financed by the client.

WP7: For the GIF++ part and irradiation facilities: Should be treated similar to other test-beam areas.

WP11: We expect to use the existing CO2 cooling system for the upgrade at point 8. Mobile systems will be used for test beam purpose until then.

(5) General comments

WP5: The usefulness of the activity “development of common, scalable electronics system” is questionable, as other systems of this kind exist