Contribution ID: **24** Type: **not specified**

R2E failure rates expectations

Tuesday 7 February 2012 11:30 (20 minutes)

2011 very successful LHC operation has provided valuable input for the detailed analysis of radiation levels and radiation induced equipment failures. Radiation levels around LHC critical areas and the LHC tunnel were studied in detail and compared to available simulation results, as well as put in perspective to LHC operation parameters. Observed radiation induced failures were not only analyzed in detail, but already addressed through early relocation measures and patch-solution on the equipment level. Both improvements continue during this xMasBreak together with the installation of heavy shielding around the RBs and UJs in Point-1. Based on measured radiation levels, calculations for the shielding improvements and expected operational parameters this talk provides an update on the expected radiation levels around LHC critical areas. Briefly summarizing the already performed mitigation measures and equipment patches, an estimate is provided on expected equipment failure rates during 2012 operation. Required beam and measurement studies are highlighted in order to further improve the predictions of both radiation levels and expected equipment failures, the latter driving the chosen mitigation actions for LS1.

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Session Classification: S03 - Strategy for 2012 (I)