

Concerns with Low Emittance Beams Operation

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New techniques for the production of 25 ns bunch trains in the LHC injector chain have been successfully tested in the last year of the LHC run 1. These new techniques can produce bunches with unprecedented brightness for similar bunch intensities like in the nominal scheme, but significantly reduced emittances. The material damage potential depends however roughly on the ratio intensity to emittance. The effect of the new beams in case of impact on protection devices and their attenuation therefore has to be carefully evaluated. This talk will summarize the result of material survival simulations for various possible beams after LS1 and LS2 for protection devices and dumps. Possible implications on operation with these beams and limitations of emittance measurement devices will be discussed as well. The talk will also highlight the necessity of beam based material tests in HiRadMat to fully understand material properties under the severe conditions of shock impact from high intensity beams.

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