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【336】 Non-linear dynamics diffusive mechanisms and impact on accelerators.

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Hadron colliders, have to store beams for very long periods with very good beam qualities to reach the integrated luminosity goals. The protons stored in the accelerator undergo strong non-linear distortions coming from the accelerator elements (magnets) but more fundamental from the opposite beam with the so called beam-beam interactions. The beam-beam effects are the main source of non-linear distortions with direct impact into the luminosity performances (i.e. emittance degradation, intensity reductions). This study compares the models and measurements performed at the Large Hadron Collider in 2016. Results of this study have motivated the accelerator changes which lead to the luminosity increase of 12% at the ATLAS and CMS experiments.

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