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【332】 Electron-ion dynamics and fast instabilities in the LHC

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During operation of the Large Hadron Collider (LHC) in 2017, unprecedentedly fast beam instabilities were observed. The instabilities are thought to have been the result of a complex sequence of events leading to a severe local vacuum degradation, resulting in the production of large amounts of free electrons and ions through beam-induced ionization. Simulation tools have been developed in order to numerically model the conditions in the beam chamber. In this contribution the development work will be reviewed and studies of the electron-ion dynamics and their effect on the proton beam will be presented.

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