



Contribution ID: 42

Type: Oral

Fluka studies on LHC Asynchronous Beam Dump

The LHC is a record-breaking machine for energy and intensity. It is very complex and any problem could potentially be very harmful. These possibilities have to be considered in advance and need to be investigated with simulations. These simulations are performed using the FLUKA Monte Carlo code. It has been chosen because of the high reliability of its results and the ease to custom detailed simulations all along hundreds of meters of beam line. Out of the many studies realized for the LHC, we will mainly focus on the investigation of the effects of an asynchronous beam dump. The energy stored in the LHC is of the order of hundreds of MegaJoules; in the event of an asynchronous beam dump it can be instantaneously released over the cryogenic magnets, up to some Joule cm⁻³ where the quench limit is of the order of the milliJoule cm⁻³. Quenching the magnets would not only cause a beam loss, but could also seriously damage the accelerator. Therefore, it is very important to precisely evaluate the energy released and to study whether the shielding provided by collimators and the security mechanisms enforced are sufficient to grant the accelerator safety or further actions are needed.

Primary author: Dr VERSACI, Roberto (CERN)

Co-authors: Mr MEREGHETTI, Alessio (CERN); Dr VLACHOUDIS, Vasilis (CERN); Dr BOCCONE, Vittorio (CERN)

Presenter: Dr VERSACI, Roberto (CERN)