



Contribution ID: 929 Contribution code: MOP37

Type: **Poster Presentation**

## Development of numerical tools for intra-beam scattering modelling

*Monday, 20 May 2024 16:00 (2 hours)*

Intra-beam Scattering (IBS) is one of the main mechanisms of emittance blowup and performance deterioration in the Large Hadron Collider (LHC) accelerator complex. It is particularly relevant since the recent upgrades across the injector complex to reach the high brightness beams of the High Luminosity LHC (HL-LHC) era have been implemented. Several studies have focused on developing an accurate formalism to describe IBS, and the integration of IBS in codes such as, e.g. MAD-X, is widely used in the accelerator physics community. This study presents the latest developments of a Python package for IBS simulations, recently developed at CERN, meant for integration with the Xsuite ecosystem. The new capabilities of the Python code are detailed and a thorough benchmark against existing codes is presented, for various machines of the CERN accelerator complex in different configurations.

### Footnotes

### Funding Agency

CERN

### Paper preparation format

LaTeX

### Region represented

Europe

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**Session Classification:** Monday Poster Session

**Track Classification:** MC5: Beam Dynamics and EM Fields: MC5.D05 Coherent and Incoherent Instabilities Theory, Simulations, Code Development