Contribution ID: **1496** Contribution code: **THPA057** Type: **Poster Presentation**

Reliability studies for CERN's new safe machine parameter system

Thursday, 11 May 2023 16:30 (2 hours)

The Safe Machine Parameter system (SMP) is a critical part of the machine protection system in CERN's Large Hadron Collider (LHC) and the Super Proton Synchrotron (SPS). It broadcasts safety-critical parameters like beam energy, beam intensity, the beta functions and flags indicating safety levels of the beam to other machine protection elements. The current SMP will be replaced by a consolidated system during CERN's Long Shutdown 3, foreseen to start in 2026. In this contribution the results of the reliability study of the new SMP system are presented. This study quantifies the criticality of end-users by identifying the hazard chains leading to potential damage of the involved equipment. Data-driven risk matrices are used to derive acceptable failure frequencies and reliability requirements. The study encompasses Monte Carlo simulations of sub-system level configurations to support the decision-making process in this project.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: BLASZKIEWICZ, Milosz (European Organization for Nuclear Research); APOLLONIO, Andrea (European Organization for Nuclear Research); BOLTON, Samuel (European Organization for Nuclear Research); COLINET, Antoine (European Organization for Nuclear Research); ROMERA, Iván (European Organization for Nuclear Research); SECONDO, Raffaello (European Organization for Nuclear Research); UYTHOVEN, Jan (European Organization for Nuclear Research); WOLLMANN, Daniel (European Organization for Nuclear Research); FELSBERGER, Lukas (European Organization for Nuclear Research)

Presenters: UYTHOVEN, Jan (European Organization for Nuclear Research); GANCARCIK, David (European Organization for Nuclear Research)

Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T22: Reliability, Operability