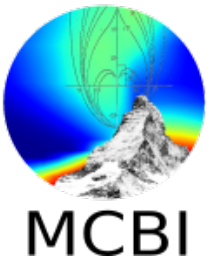

Contribution ID: **90** Type: **not specified**

* Identification of impedance sources responsible of longitudinal beam instabilities in the CERN PS

Tuesday 24 September 2019 17:50 (10 minutes)

Longitudinal instabilities in the CERN PS are an important limitation in the framework of the LHC Injector Upgrade project to reach the expected beam intensity and longitudinal emittance at PS extraction. The observed instabilities include dipolar and quadrupolar coupled-bunch instabilities, as well as uncontrolled longitudinal emittance blow-up with protons. A microwave instability develops quickly at transition crossing with ion beams. To identify the potential sources of these instabilities, two strategies were adopted. Firstly, measurements were performed for different impedance configurations, i.e. by partially detuning the main rf cavities. Secondly, a thorough survey of the devices in the machine and rf studies allowed to refine the PS impedance model, in order to find potentially missing sources. Measurements were compared with particles simulations using the updated impedance model of the PS. Although the source of dipolar coupled-bunch instabilities was already identified in the past, this study led to the identification of the impedance sources driving the other types of longitudinal instabilities.

Authors: LASHEEN, Alexandre (CERN); DAMERAU, Heiko (CERN); FAVIA, Giorgia (CERN); KOZLOWSKI, Pawel (Warsaw University of Technology (PL)); POPOVIC, Branko Kosta (CERN)

Presenter: LASHEEN, Alexandre (CERN)

Session Classification: Poster Session