

ARIES-ADA Topical Workshop



Extracting Information from electro-magnetic monitors in Hadron Accelerators

Geneva, Switzerland, 14th to 16th May 2018

INDICO-site: <https://indico.cern.ch/event/705430/>

Workshop Summary

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Workshop introduction and goals

The Topical Workshop on 'Extracting Information from electromagnetic monitors in Hadron Accelerators' took place from the 21st to 24th of May 2018 at CERN (Geneva, Switzerland) with 32 participants from America, Asia and Europe. The workshop's INDICO-site is <https://indico.cern.ch/event/705430/>. The goal was to strengthen the collaboration between the beam dynamics and beam instrumentation community as both communities have to contribute to a correct interpretation of advanced beam measurements. Additionally, people working at 3rd generation light sources participated as the topic is equally essential for the electron- and hadron synchrotrons.

The workshop focused on various measurement methods of lattice parameters at synchrotrons such as the machine tune and chromaticity. Recent results concerning betatron-function measurement and beta-beating determination were discussed. The different methods used for optics measurements were summarised in an overview talk. It was shown that part of the progress is related to improvements in the achievable accuracy of the BPM readout. The applicability of methods leading to significant noise reduction of the BPM data was demonstrated in several contributions. Moreover, the determination of advanced parameters such as intensity-dependent tune shift and tune spread determined via quadrupolar oscillations is a hot topic and intensively discussed between instrumentation and beam dynamics experts. A comparison between simulations and measurements at CERN PS shows a good correspondence, as had been clearly depicted in one of the contributions.

Further on, Schottky signal analysis was discussed in several contributions. This method enables the observation of many parameters without any influence on the beam. The applicability for coasting and bunched beams for daily operation and detailed machine studies were discussed. E.g. the advanced Schottky system at LHC was recently realised and enabled online measurements, e.g. of tune and chromaticity. Using Schottky analysis, it is possible to perform BPM-based position measurements for a coasting beam. Those contributions serve as a comprehensive collection of the standard and advanced applications.