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Tune Measurements : Methods and Applications at GSI SIS-18

Precise and accurate tune determination is crucial for stable operation of synchrotrons especially with high intensity beams. Real time tune measurements are done at GSI SIS-18 using recently commissioned tune, orbit and position measurement system (TOPOS). Many experiments involving tune measurements were done at energies in the range 11.4- 600 MeV/u with several beam intensities and ion types. Several effects like coherent tune shift, head tail oscillations in dependence of beam intensity were observed. This contribution presents the tune measurement methods available at SIS-18 and selected observations of these experiments which could be useful for design and operation at FAIR synchrotrons.

Primary author: SINGH, Rahul (GSI, Darmstadt)

Co-authors: FORCK, Peter; Dr KOWINA, Piotr (GSI); Mr KAUFMANN, Wolfgang (GSI)

Presenter: SINGH, Rahul (GSI, Darmstadt)