

## *Abstract*

At GSI the FAIR project was launched, the Facility for Anti-proton and Ion Research. It will extend the existing accelerator chain by two synchrotrons and four major storage rings, providing capabilities for a broad range of experiments with all kinds of ions as well as antiprotons. Pulse-to-pulse time sharing of the first stages will allow serving simultaneously up to four experiments from different research programs, with different beams.

Besides the general synchronization tasks in accelerators, the machine timing system has to control the time multiplexing in the synchrotrons and transfer lines as well as the synchronization of accelerators and storage rings for beam transfer. The existing GSI accelerators already today routinely handle several experiments with different beams on a pulse to pulse basis, similar to the future FAIR operation. However, the present day timing system will not be sufficient for the increased flexibility of the new facility.

A new timing system has to be developed for the FAIR facility. The main needs for the future GSI timing system will be presented as well as first ideas for implementation.

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