MATTER AND TECHNOLOGIES

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The SIS100 laser cooling facility - concept and status

The heavy-ion synchrotron SIS100 will be at the heart of FAIR. This impressive new machine with a circumference of 1084 m and a maximum magnetic rigidity of 100 Tm (superconducting magnets), will provide very high intensities of ultra-relativistic heavy highly charged ion beams. In order to further improve the quality of these ion beams, the SIS100 laser cooling facility will be constructed. Laser cooling of bunched ion beams is a very promising method because the laser force increases with γ and cooling times could be of the order of seconds. Many different ion species could be addressed by state-of-the-art laser systems (cw and pulsed) due to the relativistic Doppler-shift of the laser wavelength, as seen by the counter-propagating ions. It is planned to carefully diagnose and extract these very cold ion beams from the SIS100 and uniquely deliver very short ultra-relativistic ion bunches to experiments. We will present the concept and report on the status of the project.

Speed talk:

I am unwilling/unable to present a speed talk

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