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Laser Cooling at the SIS100

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The heavy-ion synchrotron SIS100 at FAIR will be equipped with a truly unique laser cooling facility. A sophisticated combination of 3 newly developed UV (257 nm) and VIS (514 nm) laser systems and modest rf-bunching will allow for fast cooling of injected intense heavy-ion beams. There will be two powerful pulsed laser systems with MHz repetition rates and variable pulse duration and one powerful tunable cw laser system. The picosecond laser pulses are broad in frequency and will enable fast cooling of injected ion beams with a large initial longitudinal momentum spread. The cw laser can be quickly tuned over a large range and has high spectral power, forcing the ion beams to remain cold during storage. This combination of 3 laser beams should be up for the challenge of suppressing intra-beam scattering and space charge effects. I will give an update of the status of the SIS100 laser cooling facility and will show new results from our laser cooling simulations.

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