MATTER AND TECHNOLOGIES

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Simulations of Cryogenic Surfaces in the Room Temperature Synchrotron SIS18

The FAIR complex at the GSI Helmholtzzentrum will generate heavy ion beams of ultimate intensities of $5{\cdot}10^{11}$ U^{28+} particles per pulse. To achieve this goal, low charge states have to be used. This avoids stripping losses and the space charge limit is shifted to higher number of particles. However, the probability for charge exchange in collision with residual gas particles of such ions is much higher than for higher charge states. In order to lower the residual gas density to extreme high vacuum conditions, 65% of the circumference of SIS18 are already coated with NEG, which provides high and distributed pumping speed. Nevertheless, nobel and nobel-like components, which have very high ionization cross sections, do not get pumped by this coating. A cryogenic environment provides high pumping speed for all heavy residual gas particles. The installation of cryogenic installations in the existing room temperature synchrotron SIS18 at GSI has been investigated. A prototype quadrupole and ion-catcher chamber with cryogenic installations and simulations with Molflow and of the adapted accelerator, are presented.

Speed Talks

I am unable/unwilling to give a speedtalk.

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