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## Determination of uncontrolled beam loss and spill micro structures during slow extraction for the future FAIR synchrotron SIS100 with particle tracking

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The projected SIS-100 synchrotron at FAIR will provide heavy ion beams for many different user experiments. Most of these experiments will require beams from slow extraction. Slow extraction is mainly characterized by the amount of uncontrolled beam losses and temporal microscopic structures on the extracted beam also referred to as spill. For both characteristics, predictions are done based on particle tracking simulations. The requirements to both types of simulations are different which results in differences in the computational demands. Determining particle losses requires the application of the full lattices with a comprehensive model of magnet errors and all apertures, whereas spill structures can be characterized using a less precise lattice model. On the other hand, spill structure simulations require realistic particle numbers and time intervals, which can be reduced when only looking for particle losses.

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