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## **Slow extraction with octupoles at CERN proton synchrotron to improve extraction efficiency**

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The extraction inefficiency of the slow extraction process induces radioactivity in the area surrounding the electrostatic septum. Studies at the CERN Proton Synchrotron (PS) are investigating beam loss reduction techniques to improve the efficiency of the beams provided to the experiments of the East Area. Powering octupoles distorts the transverse phase-space of the extracted beam which can be exploited to maximize the number of particles in the field region of the septum with respect to the number lost on the septum. The effect of octupoles on the separatrices near the third-order resonance is simulated with MADX-PTC tools to observe phase space folding and to predict the multipole parameters needed to minimize beam loss. Experimental studies are performed to confirm the validity of the simulation models and to quantify the net benefit of using octupoles to improve the extraction efficiency.

### **Funding Agency**

### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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