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Advancements in injection efficiency modelling for the Low Energy Ion Ring (LEIR) at CERN

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The performance of the Low Energy Ion Ring (LEIR) at CERN is mainly determined by the number of charges extracted from the machine and transferred to the downstream chain of accelerators. While the required target of 9×10^{10} charges has now been surpassed, a series of studies have been undertaken to further push the intensity reach of LEIR. In this work, we quantify the effect of the stray fields generated by the adjoining Proton Synchrotron (PS), which were recently partially shielded, and the effect of the stripper foil in the Linac supplying LEIR with its ions, Linac 3. The impact of the stray field was measured by observing the variation in injection trajectory, while that of the stripper foil was determined from the evolution of the Schottky energy profile in LEIR. Models have been developed to extrapolate the impact of these effects to the injection efficiency of LEIR, and consequently to the extracted beam intensity.

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Footnotes

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Yes

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