Intrabeam Stripping of H- Ions in the JLEIC Ion Linac with Py-ORBIT MADELINE CLYBURN, Berry College, TODD SATOGATA, Thomas Jefferson National Accelerator Facility / Old Dominion University, AMY SY, Thomas Jefferson National Accelerator Facility — Jefferson Lab is designing an electron-ion collider (JLEIC) to meet the experimental needs of the nuclear physics community. In JLEIC, a potential mechanism for beam loss is intrabeam stripping of the H-ions in the linear accelerator (linac). As the ions interact with each other, there is a chance that electrons will be stripped from the ions. This creates neutral particles that are unaffected by the electromagnetic fields and are thus lost. This project determined whether intrabeam stripping is a relevant form of beam loss for JLEIC. The pyORBIT code was modified to simulate the beam dynamics of the JLEIC linac. Then plots were created of relativistic velocity to determine the likelihood of intrabeam stripping. From these plots, the relativistic velocity values of the ion beam were found to be similar to values from previous studies on other linacs; however, the calculated average power of JLEIC is significantly lower than the powers of other linacs. Previous predictions have shown that intrabeam stripping is negligible below a certain average power value. Our value for average power was many orders of magnitude below this average power value and thus confirmed that intrabeam stripping of the H- ions will have negligible effects on the amount of beam loss in JLEIC ion linac.

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