

Alternate Operating Scenarios For NDCX-II*

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NDCX-II is a newly completed accelerator facility at LBNL, built to study ion-heated warm dense matter and aspects of ion-driven targets for inertial-fusion energy. The baseline design calls for using twelve induction cells to accelerate 40 nC of Li⁺ ions to 1.2 MeV. During commissioning, though, we plan to extend the source lifetime by extracting less total charge. For operational flexibility, the option of using a helium plasma source is also being investigated. Over time, we expect that NDCX-II will be upgraded to substantially higher energies, necessitating the use of heavier ions to keep a suitable deposition range in targets. Each of these options requires development of an alternate acceleration schedule and the associated transverse focusing. The schedules here are first worked out with a fast-running 1-D particle-in-cell code ASP, then 2-D and 3-D Warp simulations are used to verify the 1-D results and to design transverse focusing.

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