

Abstract Submitted
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High-Current Superconducting Cyclotron for Accelerator-Driven Subcritical Fission and for Medical Isotope Production¹ KARIE BADGLEY, SAEED ASSADI, PETER MCINTYRE, AKHDIYOR SATTAROV, Texas A&M University — A 50 MeV, 5mA proton cyclotron is being developed as the injector for a high-current driver for an accelerator-driven subcritical fission power system (ADSMS), and also for production of isotopes for medical physics. Two innovations have made it possible to design a cyclotron capable of >5 mA beam current: strong-focusing of the bunches by quadrupole focusing channels integrated on the pole faces of the sector magnets, and superconducting rf accelerating cavities to provide sufficient energy gain per turn to cleanly separate the orbits. Simulation results will be presented for the beam dynamics of the intense proton bunches during injection, acceleration, and extraction. Key features for both applications will be discussed.

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