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Applications of the High-Current IsoDAR Cyclotron Beyond Neutrino Physics LOYD WAITES, Massachusetts Institute of Technology MIT, ISODAR COLLABORATION — The IsoDAR cyclotron is a compact, high-current, 60 MeV proton accelerator. It was originally conceived as a driver for a definitive sterile neutrino experiment. However, with its design beam current greatly exceeding the capabilities of presently available cyclotrons, the technology lends itself to a variety of applications beyond particle physics. The high current and versatility of using an H2+ beam makes it an ideal system for high power target development, which is a critical bottleneck in the medical isotope community. This technology would also be helpful for development of materials and in energy research. We describe the cyclotron design, including novel methods of applying machine learning to injector development, and the multiple uses of this particle accelerator. These applications demonstrate how the IsoDAR cyclotron could have an important impact on physics communities beyond particle physics, and on society.

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