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On the way to a world-competitive fission fragment facility at SARAF

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Combining an Ion Catcher, which is based on the cryogenic stopping cell that is being designed for the Low Energy Branch at the Super-FRS at FAIR [1], with the high-power accelerator SARAF II, currently under construction at Soreq NRC [2], and a liquid lithium target [3] will enable creating a research facility for neutron-rich exotic isotopes based on high-energy neutrons induced fission. I will outline a conceptual design and possible implementation of the Ion Catcher at SARAF, along with rate estimations, which indicate that such a facility will be potent in a world competitive manner, with neutron-rich isotope production rates higher than much larger future facilities such as FRIB.

References:
[1] T. Dickel et al., "Conceptional design of a novel next-generation cryogenic stopping cell for the Low-Energy Branch of the Super-FRS", Nucl. Instr. and Meth. B 376 216-220 (2016)
[2] I. Mardor et al., "The Soreq Applied Research Accelerator Facility (SARAF): Overview, research programs and future plans", Eur. Phys. J. A (2018) 54: 91
[3] S. Halfon et al., "Note: Proton irradiation at kilowatt-power and neutron production from a free-surface liquid-lithium target", Rev. Sci. Inst. 85, 056105 (2014)

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