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The possibility for a rare beam trapping facility in Israel

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The standard model of particle physics has proved to provide a good description of almost all known particle physics processes. Despite it's successes, however, the standard model is known to be incomplete, eg. in that the standard model parameters are arbitrary and derived from experiment rather than a priori.
Experiments to test for physics beyond the standard model are being developed to probe the ultra-high energy regime, which probes directly the new physics processes. A second class of experiments searches for the effects of new physics at lower energies by performing precise measurement of observables which are calculable from the standard model and attributing any variation to new physics. Recent years have seen a plethora of such experimental proposals which make use of existing accelerator facilities (e.g., the JLab Qweak and PREx proposals) as well as experiments which borrow techniques from Atomic, Molecular, and Optical (AMO) physics. Among the latter we may note Atomic Parity Violation (APV) experiments, neutrinoless double beta-decay searched, as well as measurements of correlation coeffcients in the decay of radioactive atoms.
In this talk I will discuss the plans of performing such high precision searches at the WI, using a high-flux d+t neutron generator to produce 6He and 8Li by (alpha, n) reactions. This in turn will lead to experiments at the upcoming 40 MeV, 2 mA, proton and deuteron SARAF accelerator in Israel. The SARAF accelerator will provide record yields of light radioactive beams (such as 8Li and 6He), of O(1012) atoms/sec. The talk will address the present R&D efforts toward this goal and discuss possible collaborations with ongoing RNB trapping programs. Of particular emphasis is the use for such measurements of an electrostatic trap, that offers numerous advantages over other possibilities.

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