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## Laser resonance ionization spectroscopy of astatine

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One of the rarest elements in the universe is astatine. All isotopes of astatine are radioactive and decay into other elements. The most stable astatine isotope <sup>210</sup>At has a half-life of only 8.2 h. For this reason its elemental properties are difficult to study. Laser resonance ionization spectroscopy of astatine allows finding atomic energy levels and consequently, via the hyperfine interactions, information about nuclear structure. Finding auto-ionizing states of At, boost the overall ionization efficiency of Resonance Ionization Laser Ion Source (RILIS) such that even more exotic, shorter lived isotopes of At become accessible. A number of planned experiments rely on the predicted large octupole deformation of the heaviest At isotopes (A>220). Laser spectroscopic identification of auto-ionizing atomic states is a means to provide ionization efficiencies beyond those presently achieved by non-resonant ionization. Recent results from our experiments at TRIUMF will be presented.

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