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We are currently setting up a lattice atom interferometer, which coherently levitates the atomic wave function allowing us to circumvent the limitation given by the gravitational free fall time of the atoms. By holding a spatial superposition of K-39 atoms in a cavity enhanced optical lattice, ultra-long interaction times on the minute scale can be achieved. Furthermore, with this setup we will be capable of conducting precision measurements of short-ranging potentials to search for new physics, light induced inter-particle interactions or precise characterization of atom-surface interactions. The experiment consists of a transfer chamber separated by a valve to a science chamber, which facilitates the insertion of samples, e.g. test masses to measure their effect on the potassium atoms, but also allows for inserting tailored electron beams to perform experiments to investigate coherent interaction between atoms and electrons.

**Session Classification:** Poster Session & Wine & Coffee