

# Towards a levitated atom interferometer with potassium

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We develop a setup suitable for cavity-enhanced levitated atom interferometry, which is capable of very long interaction times [1, 2]. By holding atoms in a lattice, short-ranging potentials can be measured, enabling high precision experiments allowing to search for new physics and light induced interactions [3–5]. The small hyperfine splittings simplify the generation of laser frequencies needed for cooling the bosonic isotopes <sup>39</sup>K and <sup>41</sup>K from a single laser using acousto-optic modulators. 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 electron sources to perform experiments to realize coherent interactions between atoms and electrons [6].

## References

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