

eurorib'10

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Testing fundamental symmetries with Ra isotopes

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Radium isotopes are of interest because they have advantageous properties searching for new physics beyond the Standard Model of particle physics. At KVI we are developing experiments to measure Atomic Parity Violation (APV) and Time Reversal Violation (TRV) using Ra ions and atoms, respectively. The APV measurements aim to improve on the accuracy of weak charge measurements. The sensitivity scales faster than the atomic number of the atom and therefore Ra ions may improve on the current best accuracy obtained with Cs. Limits on TRV can be obtained by searching for a permanent Electric Dipole Moment (EDM) also here Ra is orders of magnitude more sensitive than the current best limit on the EDM using Hg atoms. Current focus is on measuring atomic properties of Ra ions and atoms. We describe the production and trapping of Ra atoms and ions and the first measurements, such as isotope shifts and hyperfine interactions of excited states, which address the accuracy of theoretical calculations. The latter will be essential for the interpretation of the fundamental experiments.

Is this an invited talk? (please answer yes or no)

no

Would you prefer your contribution to be a poster presentation? (please answer yes or no)

no

Would you prefer your contribution to be an oral presentation? (please answer yes or no)

yes

Are you a student, postdoc or an attendee from an “emerging” country and would like to apply for financial support?

no

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