



Quantum Colloquium

Resonant (laser) excitation of the Thorium-229 nucleus

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Among all known isotopes, Thorium-229 has the lowest nuclear excited state, only 8.4 eV above the ground state. This so-called “isomer” is accessible to VUV laser excitation and a plethora of applications at the interface of atomic and nuclear physics have been proposed, including a nuclear clock, a gamma laser and a sensitive detector for variations of fundamental constants. After decades of attempts to determine the exact isomer energy and other nuclear properties, we report on two experiments which resonantly excite the isomer, through X-ray pumping via the 2nd nuclear state at 29 keV and direct excitation using a VUV laser. This marks the transfer of precision laser spectroscopy into the field of nuclear physics.

Tuesday, June 11, 2024 11:00am - 12:00pm

Heinzel Seminar Room / Ground Floor / Office Building West



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