

ICFO Colloquium Series: Nuclear laser spectroscopy - the story of Thorium-229

THORSTEN SCHUMM

April 10, 2026
10:00 to 11:00
ICFO Auditorium

PROFILE

Thorsten Schumm was born 1975 in Berlin. He studied Physics and Philosophy in Berlin, Innsbruck and Heidelberg. His PhD thesis in experimental physics was carried out as a bi-national research project (?Cotutelle de Thesei¿½) in Paris and Heidelberg in the groups f Jorg Schmiedmayer and Alain Aspect. It finished 2006 and was awarded the Ruprecht-Kar s prize of the University of Heidelberg. After a short research stay in Toronto, Thorst n Schumm became an Assistant Professor at the TU Wien in 2006. Since 2011, he is leading t e Quantum Metrology research group as a University Professor. His research was awarded t e START prize in 2009 and the ERC starting grant in 2010, in 2015-2020 he has coordinated t e EU FET-Open research alliance i¿½nuClocki¿½ and an ongoing ERC Synergy project

since
2020. Thorsten Schumm's research focusses on the development of novel measurement m
thods based on principles of quantum mechanics, in particular atomic and nuclear cloc
s and matter wave interfero

ABSTRACT

Among the >3000 isotopes, Thorium-229 provides the lowest-energy nuclear first excited state, a so-called isomer state.
This isomer state at 8.4 eV is the only nuclear state accessible to laser manipulation and spectroscopy.
It's long >10 minutes lifetimes with a connected narrow transition linewidth, combined with the intrinsic robustness of nuclear transitions, makes it an exciting candidate for a i¿½nucle r clocki?
½. The talk will report on recent developments in this field, triggered by the first laser excita ion of Thorium-229 in 2
23. We will report on a prototype solid-state variant of a nuclear clock, optical Mossb uer spectroscopy, CW laser absorption spectroscopy, and first constraints on ultralight ark matter models.
** If you require an accommodation to participate in this event due to a disability, please contact the Events Team at events@icfo.eu as soon as possible.
Hosted by: Prof. Dr. Leticia Tarruell