Post Doc Position at LKB - Laboratoire Kastler Brossel
Pierre et Marie Curie University, Paris France

« Trapped ions » team
http://www.lkb.upmc.fr/-Metrologie-de-l-ion-H+_2-

Precision measurements with cold trapped H$_2^+$ molecular ions

Research project

The Trapped Ions team is developing an experimental setup aiming at performing a direct optical determination of the proton to electron mass ratio at the 0.01 ppb level through Doppler free two-photon vibrational spectroscopy in H$_2^+$ molecular ions. Spectroscopy will be performed by Resonance Enhanced Multiphoton Ionisation (2+1 REMPD) on state selected ions.

The H$_2^+$ ions are confined in a linear Paul trap and sympathetically cooled by laser cooled Be$^+$ ions. The H$_2^+$ ions are created by Resonance Enhanced Multiphoton Ionisation (REMPI) at 303 nm. The H$_2^+$ spectroscopy laser is an ultrastable quantum cascade laser (QCL) phase-locked on a CO$_2$ laser matched to a Fabry-Perot cavity surrounding the ion cloud.

The work of the post doctoral scientist will first consist in characterising the temperature and the ro-vibrational populations of the state selected H$_2^+$ ion sample. It will then consist in achieving the first observation of the (v=0,L=2) → (v=1,L=2) two-photon transition in H$_2^+$ towards a m$_p$/m$_e$ determination by comparison with highly accurate calculations.

Profile

The applicant should have a strong background in experimental physics, in the fields of molecular, atomic, ion and laser physics. An experience in the field of cold matter and especially cold ions is desirable.

Starting date
Between april and september 2016

The position is funded for one year by the French Research Agency (ANR) and can be extended to a second year.

Application Candidate should provide a CV, motivation letter an publication list and obtain two reference letters directly sent to hilico@spectro.jussieu.fr

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