

Pr. Wim UBACHS
from Vrije Universiteit Amsterdam

*will give a **SEMINAR** entitled:*

**« Precision measurements of molecular hydrogen in
search for new physics »**

Thursday 15 February – 10:00

E.032 NAPS Seminar room

Marc de Hemptinne – SC01, Chemin du Cyclotron, 2 – LLN

ABSTRACT :

**Precision measurements of molecular hydrogen in
search for new physics**

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The hydrogen molecule has become a benchmark system for testing theory at the most fundamental level (quantum electrodynamics) and for probing physics beyond the Standard Model at the atomic/molecular scale: are there forces beyond the three included in the Standard Model of physics plus gravity. Comparison of laboratory wavelengths of transitions in hydrogen may be compared with the lines observed during the epoch of the early Universe to verify whether fundamental constants of Nature have varied over cosmological time. In recent studies a variety of new results have been obtained: Dissociation limits of H₂, HD and D₂ are measured to 10-digit accuracy. The measurement of vibrational transitions has been made possible via the sensitive NICE-OHMS technique, and measurements are currently being extended to radioactive tritium species.

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