

# GENERAL PHYSICS COLLOQUIUM

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**Title:** Ultracold molecules and the quest for chemistry at zero entropy

**Speaker:** Matthias Weidemüller  
Physikalisches Institut der Universität Freiburg

**Time:** Wednesday, 30 November 2005 at 3.15 p.m.

**Place:** Physics Auditorium

## Abstract

Recent experimental advances in the preparation of sources of cold atoms and cold molecules have made it possible to cool gas-phase molecules to temperatures far below 1 K and trap them in well-defined internal states. Translational temperatures in the microkelvin range have been achieved for molecules in optical traps, and even quantum degenerate gases of weakly bound molecules have been experimentally realized. Such developments now provide us with the opportunity to open a new domain of chemistry where processes are governed by collective quantum phenomena at vanishing entropy.

After a general introduction into the field, the presentation will focus on the formation and the interaction of ultracold molecules made from optically cooled and trapped atomic gases, and on the prospects of ultracold chemistry with trapped ions.

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*Coffee/tea and cake will be served at 3 p.m.*