COLD MOLECULES AND SPECTROSCOPY

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Cold molecules offer fascinating possibilities for novel molecular physics and physical chemistry experiments, such as studying cold collisions or performing high-resolution spectroscopy. Using inhomogeneous electric fields neutral polar molecules can be decelerated to any computer-controlled velocity. The use of state-selected slow molecules can lead to a significantly increased interaction time of the molecules with the electromagnetic radiation in the spectroscopic experiment, resulting in a higher resolution. In this talk we will focus on the deceleration procedure to produce cold molecules and on their prospects for high-resolution (microwave) spectroscopy [1].

[1] J. van Veldhoven, J. Küpper, H.L. Bethlem, B. Sartakov, A.J.A. van Roij, G. Meijer Phys. *Eur. Phys. J. D* 31, 337-349 (2004).