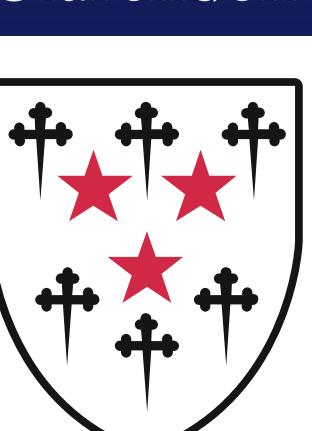
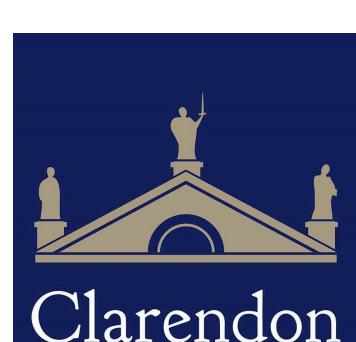


# COLD MACHINE

QUANTUM CHEMISTRY FROM M. HEJDUK N. COUGHLAN A. TSIKRITEA AND H. HEAZLEWOOD GROUP

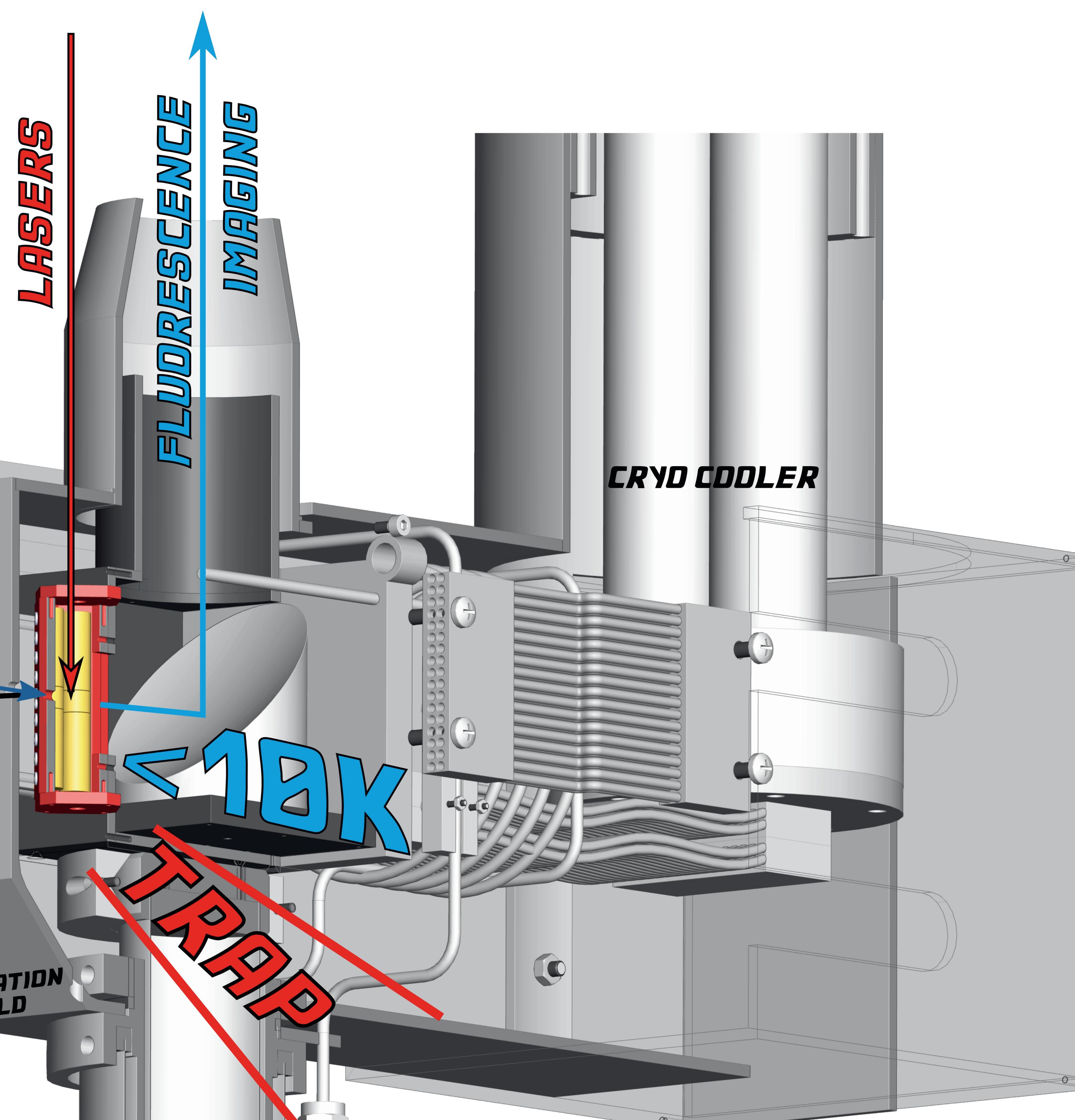


**EPSRC**  
Engineering and Physical Sciences Research Council



COLD MOLECULAR IONS AT THE QUANTUM LIMIT

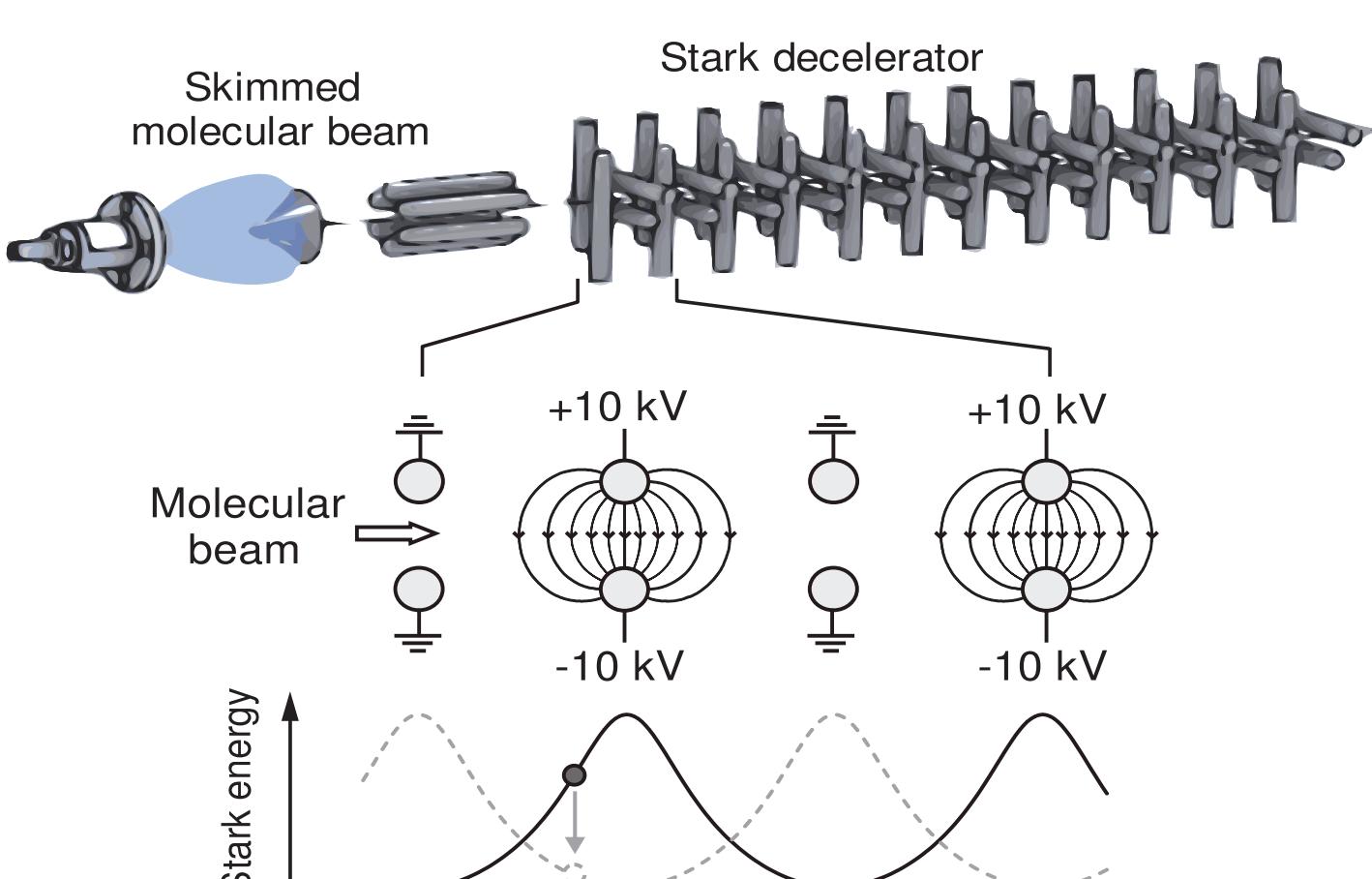
SLOW NEUTRALS  
TO THE TIME  
OF FLIGHT  
MASS SPEC.



## SLOWING DOWN

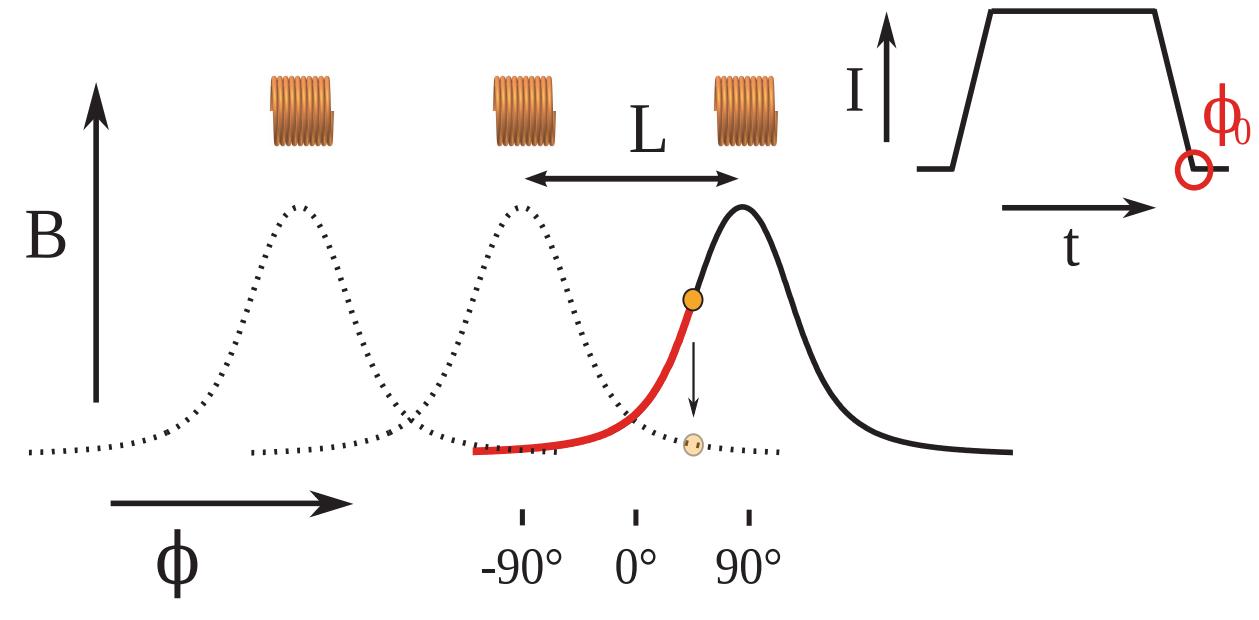
Beams of slow radicals or neutral polar molecules are generated by our decelerators.

### STARK DECELERATOR FOR POLAR MOLECULES



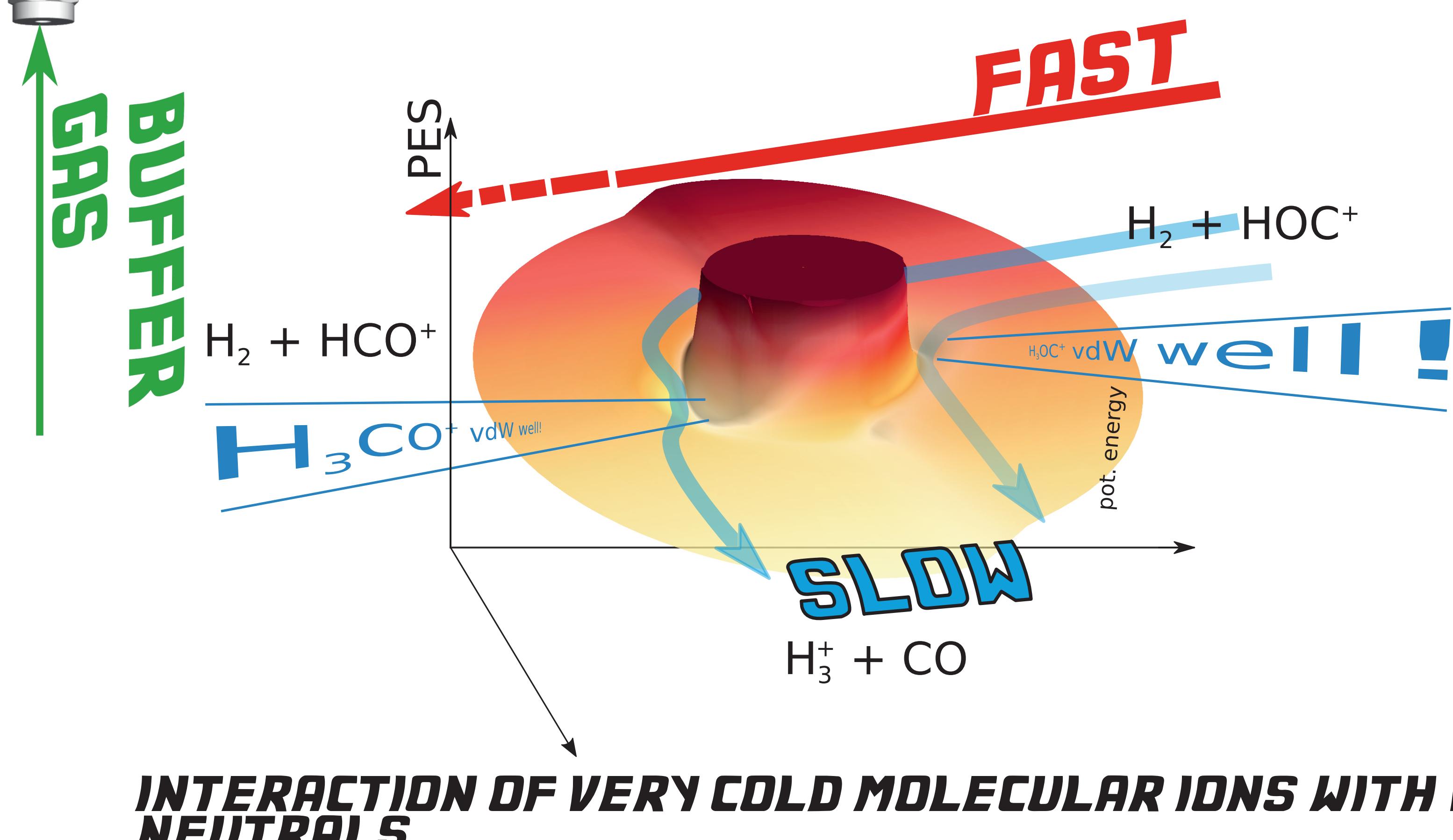
In a Stark decelerator, polar neutral molecules in low-field seeking quantum states can be decelerated through the implementation of rapid switching of voltages of the electrode pairs.

### ZEEMAN DECELERATOR FOR RADICALS



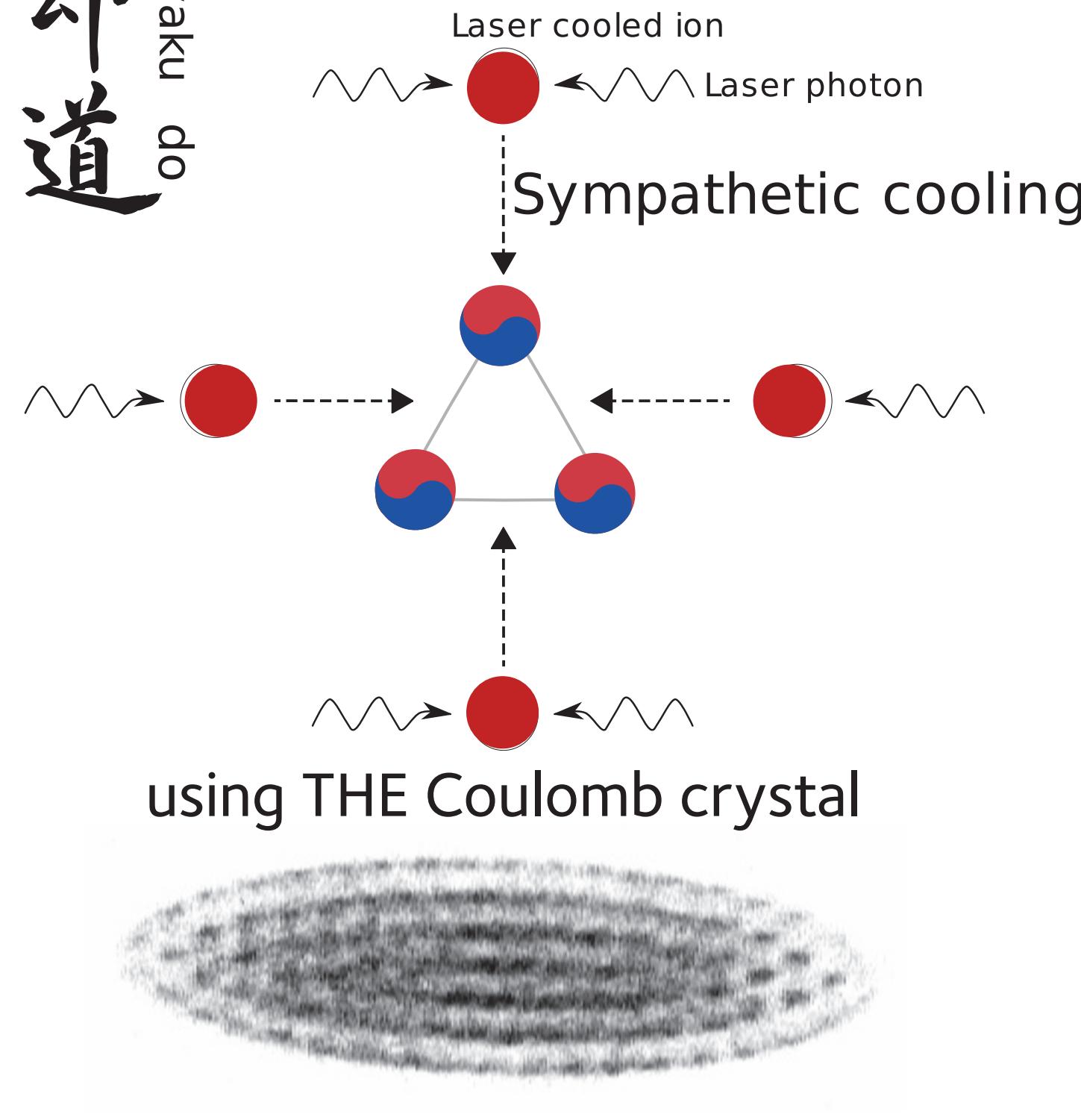
In a Zeeman decelerator paramagnetic species can be decelerated passing through a sequence of solenoid coils.

## WHAT DO WE WANT TO STUDY ?

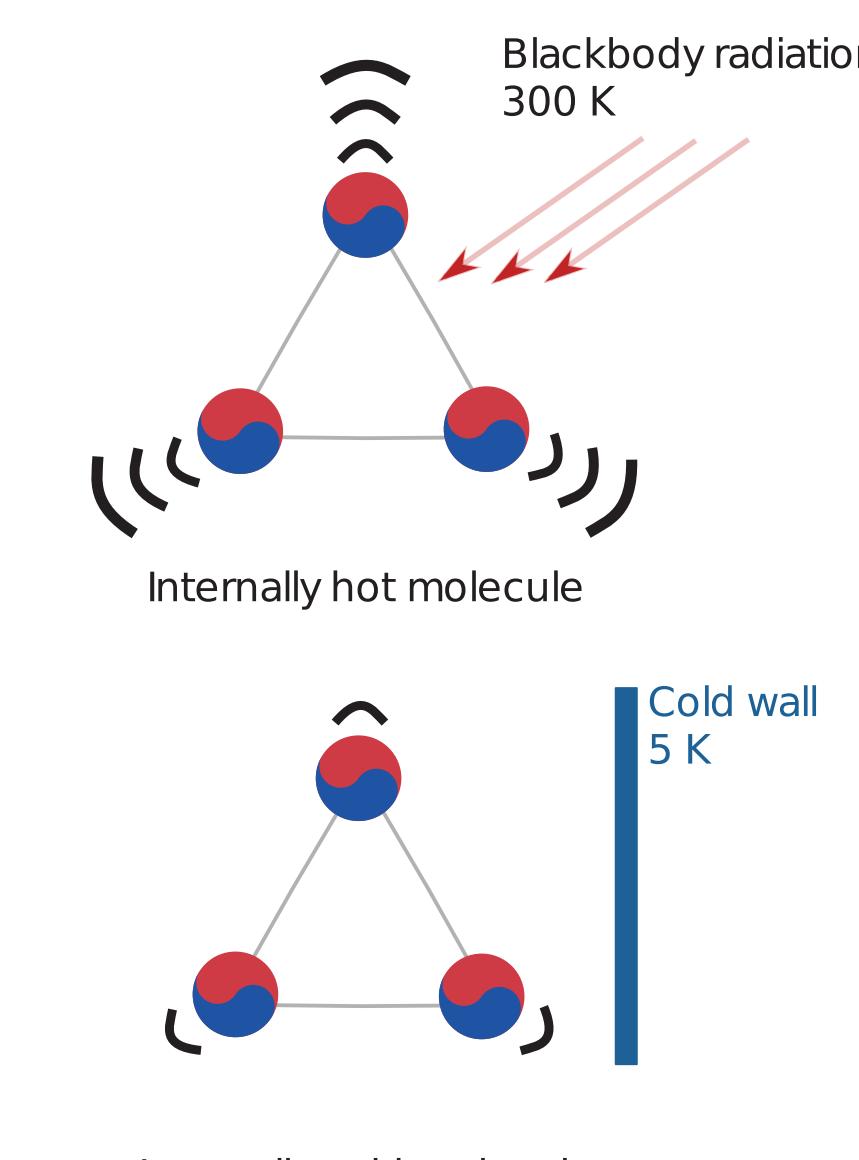


Stabilisation of intermediate collisional complexes can occur only at the lowest collisional and internal energies. [H.-G. Yu, Phys. Scr. 84 (2011), p. 028104] We want to discover the world of exotic chemistry.

## 冷却道 “THE WAY OF ION COOLING”



### radiative cooling



### buffer gas cooling

