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Magnetic Trapping of Cold Methyl Radicals

Tuesday 30 May 2017 16:00 (15 minutes)

We have demonstrated that a supersonic beam of methyl radicals (CH_3) in the ground rotational state has been slowed down to standstill with a magnetic molecular decelerator, and successfully captured spatially in an anti-Helmholtz magnetic trap for longer than 1 sec. The trapped CH_3 radicals have a mean translational temperature of about 200 mK with an estimated density of $> 5.0 \times 10^7$ cm^{-3}.
The methyl radical is an ideal system for the study of cold molecules not only because of its high reactivities at low temperatures, but also because further cooling below 1 mK is plausible via sympathetic cooling with ultracold atoms. We will discuss properties of cold collisions between the trapped radicals and foreign gases.

Authors: Mr VASHISHTA, Manish (The University of British Columbia); Mr DJURICANIN, Pavle (The University of British Columbia); Dr LIU, Yang (The University of British Columbia); Prof. MOMOSE, Takamasa (The University of British Columbia)

Presenter: Mr VASHISHTA, Manish (The University of British Columbia)

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