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## **[523] Laser cooled anions as a sympathetic coolant**

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We are investigating the use of laser-cooled anionic molecules to sympathetically cool antiprotons confined in the same trapping potential, which is of interest for antimatter experiments at CERN. A test setup to produce cold ground state  $C_2^-$  molecules is currently being commissioned.

This setup will be presented, together with a theoretical study on the feasibility of several laser cooling schemes, including one using the AC-Stark shift.

Laser cooling of anions – which has so far never been achieved – would also enable the sympathetic cooling of any other negatively charged species, opening new opportunities in a variety of research areas.

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