

# Decelerating, trapping, and cooling of SrF for fundamental precision measurements

Joost E. van den Berg, Sreekanth C. Mathavan, Corine Meinema, Tom Nijbroek, Klaus Jungmann, Lorenz Willmann, Steven Hoekstra

University of Groningen, KVI, Zernikelaan 25, 9747 AA Groningen, The Netherlands  
j.e.van.den.berg@rug.nl

In certain diatomic molecules the sensitivity to parity violation is enhanced greatly by their energy level structure. A precise measurement of parity violation in such molecules is therefore a promising way of probing physics beyond the Standard Model. Recent developments make it possible to create and trap ultracold samples of molecules. Trapped molecules offer a coherent measurement time which can be two orders of magnitude larger than a molecular beam experiment. We aim for a measurement of molecular parity violation with trapped, laser cooled molecules.

To create an ultracold sample of molecules, we combine a traveling-wave Stark decelerator with laser cooling. Our five meter long decelerator will enable us to bring a supersonic beam of SrF molecules to standstill. Then, we can apply laser cooling on the trapped molecules to reach the ultracold regime. On the poster we present the details of these techniques and we show the current status of the experiment.

