We are setting up a novel type of Stark-decelerator optimized for the deceleration and trapping of heavy diatomic molecules. Aim of these experiments is to prepare a trapped sample of ultracold molecules for precision studies of fundamental symmetries. The decelerator uses ring-shaped electrodes to create a moving trapping potential, a prototype of which has been shown to work for CO molecules\textsuperscript{a}. Molecules can be decelerated and trapped in the weak-field seeking part of excited rotational states. The alkaline-earth monohalide molecules (currently we focus on the SrF molecule) are prime candidates for next generation parity violation and electron-EDM studies\textsuperscript{b}. We plan to combine the Stark deceleration with molecular laser cooling to create a trapped sample of molecules at a final temperature of $\sim 200 \mu K$.

\textsuperscript{b}T. A. Isaev, S. Hoekstra, R. Berger \textit{Phys. Rev. A} \textbf{82} (52521), 2010