Abstract Submitted
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Electronic and rotational spectroscopy of cold, chiral molecules SANDRA EIBENBERGER-ARIAS, ALICIA O. HERNANDEZ-CASTILLO, JOHANNES BISCHOFF, JU HYEON LEE, MARCO DEPAS, GERARD MEIJER, Fritz-Haber Institute — Chiral molecules are important in nature and exist in one of two mirror-image versions, called enantiomers. Even though most physical properties of enantiomers are identical, their handedness often determines their functionality. Recently, the enantiomer-specific state transfer method [1] was developed. This method provides the means to selectively populate or depopulate a rotational level of an enantiomer by making use of the fact that the scalar triple product of dipole moment components of the two enantiomers has opposite sign. We have designed, built, and characterized a compact spectroscopy experiment capable of performing chirped-pulse Fourier transform microwave and electronic spectroscopy. Our new setup is equipped with microwave inputs with three perpendicular polarizations, allowing for chirality-sensitive measurements. We implement more sensitive detection schemes such that even small population changes can be detected. Recent experimental results and details on the new spectrometer will be discussed. 1. Eibenberger, S., Doyle, J. & Patterson, D. Enantiomer-Specific State Transfer of Chiral Molecules. Phys Rev Lett 118, 123002, doi:10.1103/PhysRevLett.118.123002 (2017).

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