

Q 28 Poster Teilchenoptik

Zeit: Dienstag 16:30–18:30

Raum: Labsaal

Q 28.1 Di 16:30 Labsaal

Comparing the two exits of molecular matter wave interferometer with K_2 — S. LIU, I. SHERSTOV, H. KNÖCKEL, and E. TIEMANN
— Institut für Quantenoptik, Universität Hannover, Welfengarten 1, 30167 Hannover

The aim of this project is to investigate the adaptability and the precision of matter wave interferometry for study of weak interactions like cold collisions or influence of weak external fields. We are operating a matter wave interferometer in Ramsey-Bordé setup with K_2 in well defined quantum states. The four beams Ramsey-Bordé setup is observed on in a supersonic Potassium atomic beam containing only few percent of K_2 molecules.

One exit of the interferometer consists of molecules in the excited state, the second one of molecules in the ground state. The excited state exit is widely used because of its simplicity for detecting interference signals. But for many applications it is preferable to use a ground state. The advantage of our molecular matter wave interferometer setup is that the decay of the excited state almost doesn't disturb the ground state exit. Thus we can detect this interference signal a long time after the interference took place.

By applying different laser radiation resonant to K_2 ground state together with second PMT installed downstream the supersonic beam we were able to make detailed investigation of the ground state exit.