

Needed Students for Master or Doctorate

There are open Master/PhD students/postdocs positions in a new experimental group in the field of optics and atomic quantum physics in the physics department, Technion.

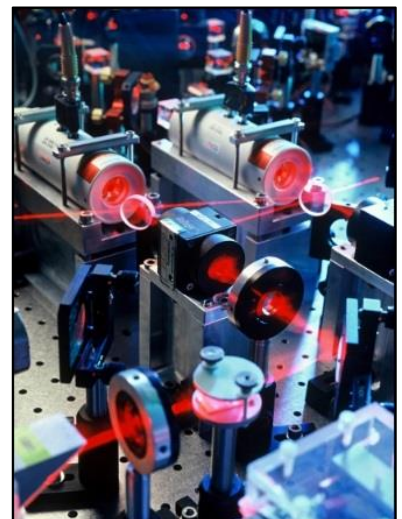
What are we studying?

Our research group is focused on understanding collective many-body phenomena of strongly interacting fermions. Electrons, protons, and neutrons are all fermions, and their interactions lead to complex collective behavior. This many-body physics can be found in astrophysics (e.g. neutron stars), particle physics (quark-gluon plasma), condensed matter physics (superfluidity and superconductivity), and atomic physics. **We study this fascinating and puzzling physics with an ultracold gas of fermionic atoms (^{40}K).**

Some of the questions we try to answer: How do fermions flow without friction? How do they pair and form composite particles (such as the Cooper pairs in a superconductor or molecules)? How they behave when their motion is restricted to only two dimensions?

The lab

We gather and cool down fermionic potassium atoms using lasers. The atoms are kept inside a vacuum chamber, trapped in a potential that we create using magnetic fields and laser light. When the atoms reach ultralow temperatures, their behavior deviates from classical “billiard balls” and requires quantum mechanics to be explained. In this regime we perform most of our studies. Working in the lab means mastering many different technologies, including lasers, optics, electro-optics, vacuum, and advanced computer control. **It is a lot of fun and very exciting!**



For more information:

Dr. Yoav Sagi, yoav.sagi@physics.technion.ac.il