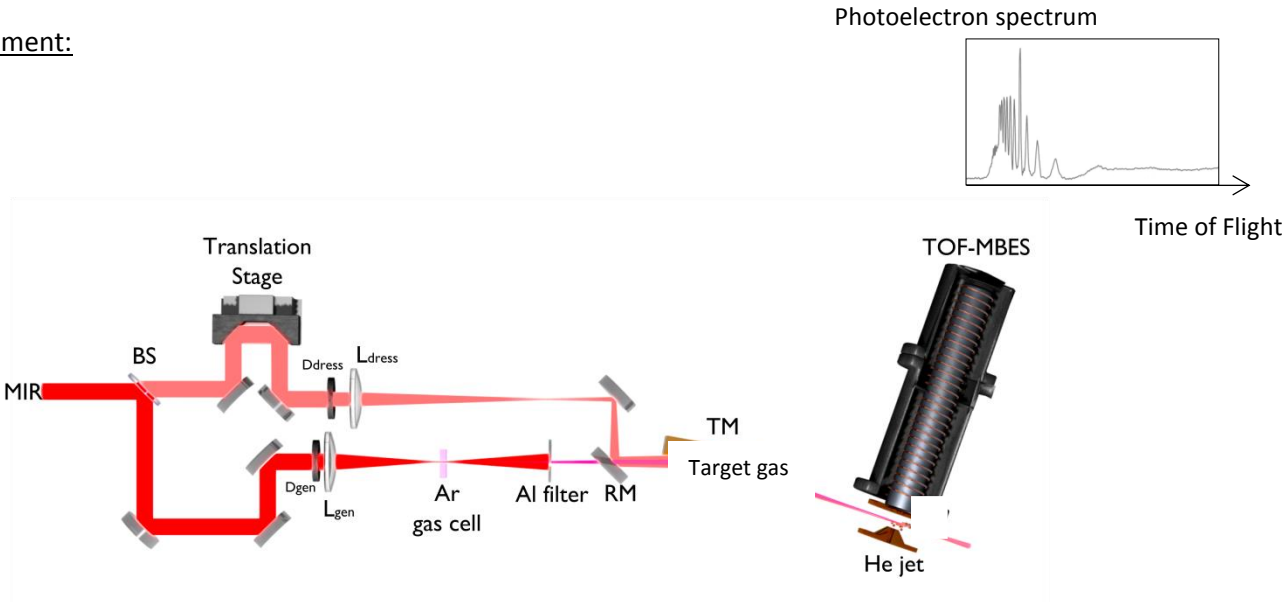
Attosecond Electron Interferometry

Location: CEA Saclay/ATTOLab SE1

Researcher in charge of the Trainees: Dr. Antonin Borot, Lou Barreau

Maximum number of Trainees: 3

Experiment:



The attosecond electron interferometry experiment (also known as RABBIT, Reconstruction of Attosecond Beating by Interferences of Two-photon Transitions) can be used to characterize attosecond pulse trains produced by high harmonic generation [1], or more recently to measure attosecond delays in photoionization [2-3].

A short IR laser beam is focused in a gas cell to generate high harmonics, that later photoionize a gas target in a Magnetic Bottle Electron Spectrometer (TOF-MBES). Part of the fundamental laser is superimposed to the harmonic radiation in the MBES, and the delay between the two arms is varied to measure the spectral phase of the harmonics.

Schedule expected:

The trainees will generate high harmonics and participate in the measurement of a RABBIT spectrogram in a target atom (argon, neon or xenon), its analysis and interpretation.

References:

[1] Y. Mairesse et al., Science 302, 1540 (2003)
[2] S. Haessler et al., Phys. Rev. A 80, 011404 (2009)
[3] V. Gruson et al., Science 354, 6313 (2016)