Scintillating Fiber Detector for AegIS Antihydrogen Trap

Speaker: Joseph Redford

AEgIS

- AEgIS - Antimatter Experiment: Gravity, Interferometry, Spectroscopy
- The primary measurement is to test the gravitational acceleration of antihydrogen
- Spectroscopy measurements will also be made
- My advisor is Claude Amsler from the University of Zurich

Setup

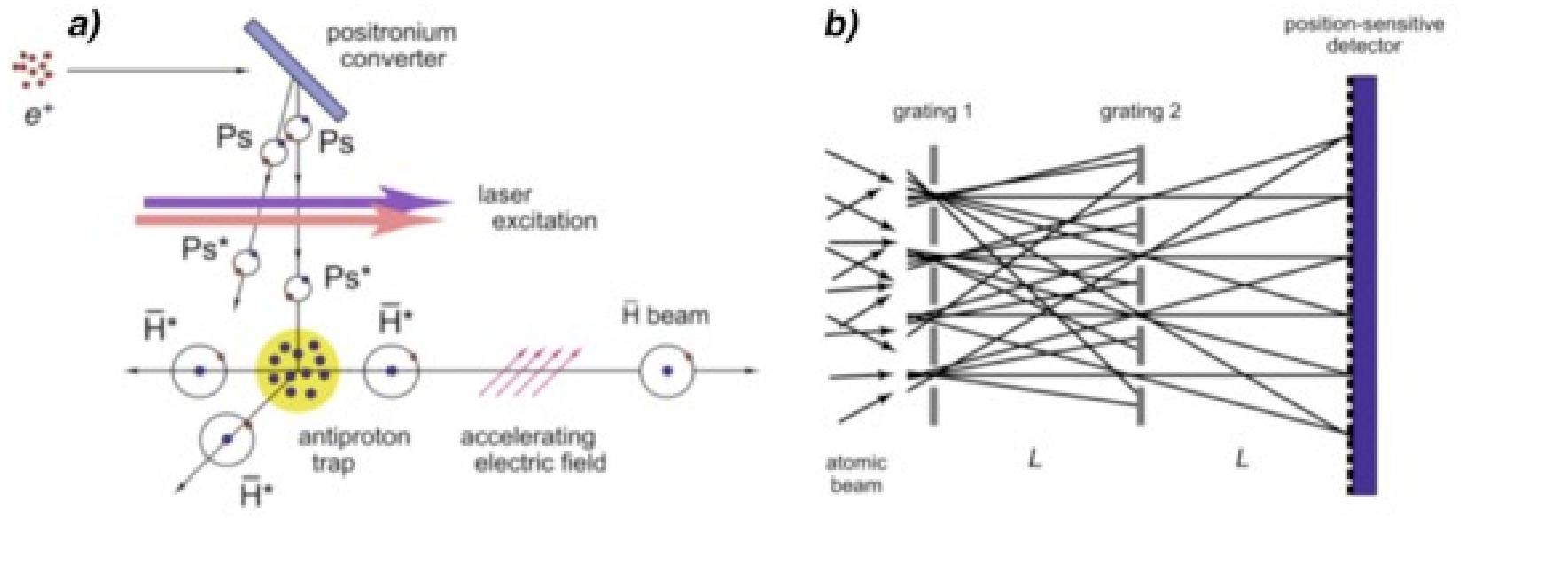

Fig. 1 (a) AEgIS scheme for $\overline{\mathrm{H}}$ beam formation; (b) configuration of the Moiré deflectometer.

Fig. 1-The basic procedure of the AEgIS experiment.
Figure taken from
http://aegis.web.cern.ch/aegis/experiment.html

Scintillating Fiber Detector

- Used to detect annihilation in the main antihydrogen trap
- Uses coils of scintillating fibers to track pions from annihilation and will determine the location of annihilation

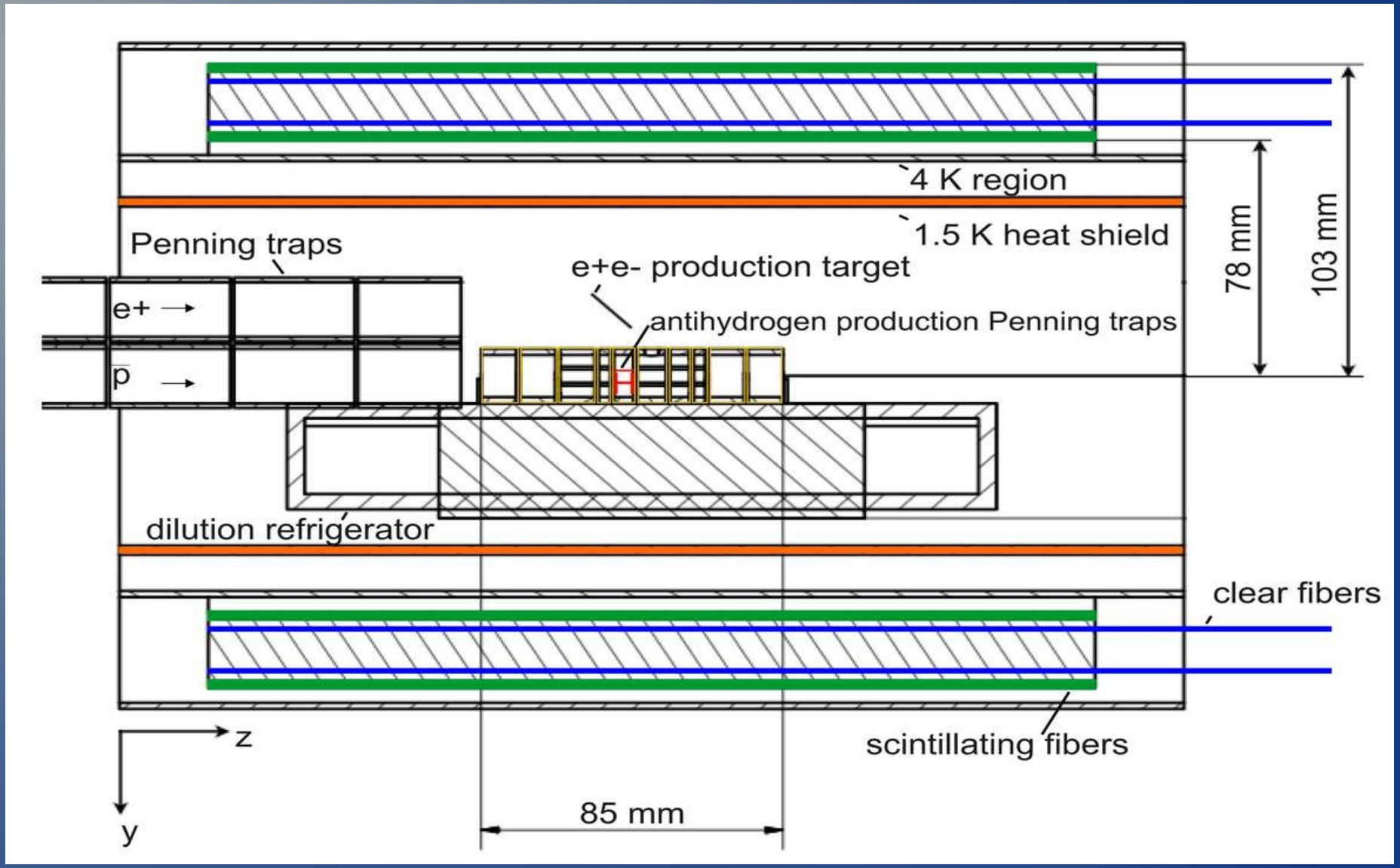

Fig. 2-A diagram of the scintillating fiber detector. Scintillating fibers are coiled around the trap in two layers shown in green. Figure taken from [1].

What I do

- My main project is to help in the final design testing and assist in the construction of the scintillating fiber detector
- Right now I am constructing a setup for testing the transmission efficiency of fiber optic junctions

What I do (cont.)

Fig. 3-dark box constructed for testing optical fiber transmission efficiency

What I do(cont.)

- For the first week I have helped in taking data testing the antiproton trap
- Last week I helped prepare for installing the positron accumulator. I may continue helping in that area if I lack other jobs to do(waiting for other groups, parts, etc.)

Possible Issues

- Several parts of the experiment may conflict with our construction, since space is limited and therefore requires careful coordination
- Time is very limited until next use of the antiproton beam. Several parts are going to be done simultaneously.

Questions?

References

[1] Y. Allkofer, C. Amsler, C. Canali, L. Jörgensen, M. Kimura, C. Regenfus, J. Rochet, and J. Storey, Test of the equivalence principle with antihydrogen