



EARLY STAGE RESEARCHER

Matteo Moioli

PROJECT: *Coincidence spectroscopy in small molecules*

Host institution: Albert Ludwig Universitaet Freiburg

Supervisors: Prof. G. Sansone , Dr. T. Metzger, Dr. R. Moshhammer

Start date: December, 01, 2016

CURRICULUM VITAE

Education

- *September/2009 - February/2013,*
Bachelor's Degree at Politecnico di Milano
- *March/2013 -December/2015,*
Master's Degree at Politecnico di Milano
- *January/2015 - December/2015,*
Intern Researcher Engineer at CNST@IIT in Milan

Work experience

- *January/2016 - March/2016,*
Intern Researcher Engineer at CNST@IIT in Milan
- *April/2016 - September/2016,*
Web Developer at WebRatio in Milan

Training schools

- *19-20/October/2015, Milan,*
Staff member at COST Action MP1205 "Advances in Optofluidics"
- *18-21/October/2016, Crete,*
Summer school, "Ultrafast dynamics driven by intense laser sources"

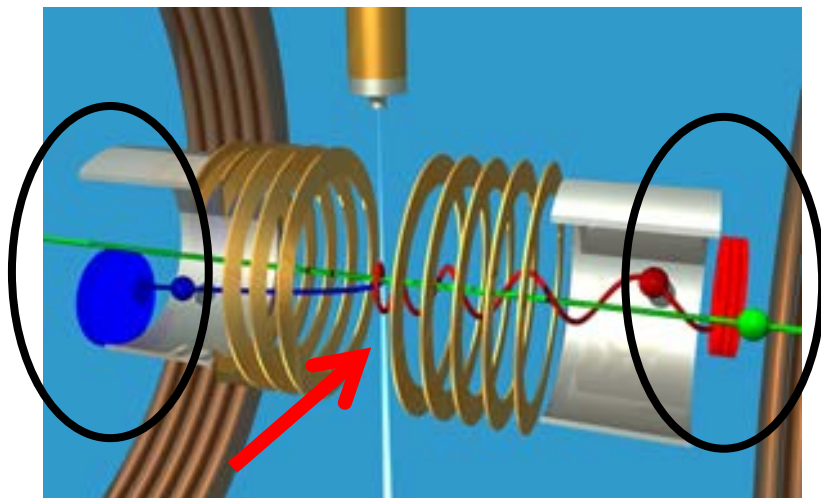
SCIENTIFIC SCOPE OF THE PROJECT

Coincidence spectroscopy in small molecules

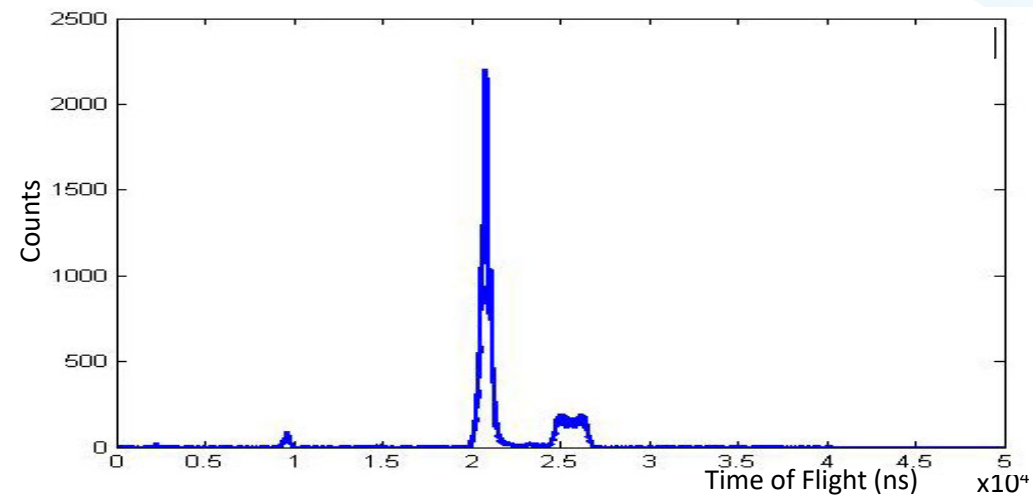
Motivation: investigation of electron and nuclear dynamics in small molecules (H₂, CO₂, SF₆)

Reaction Microscope

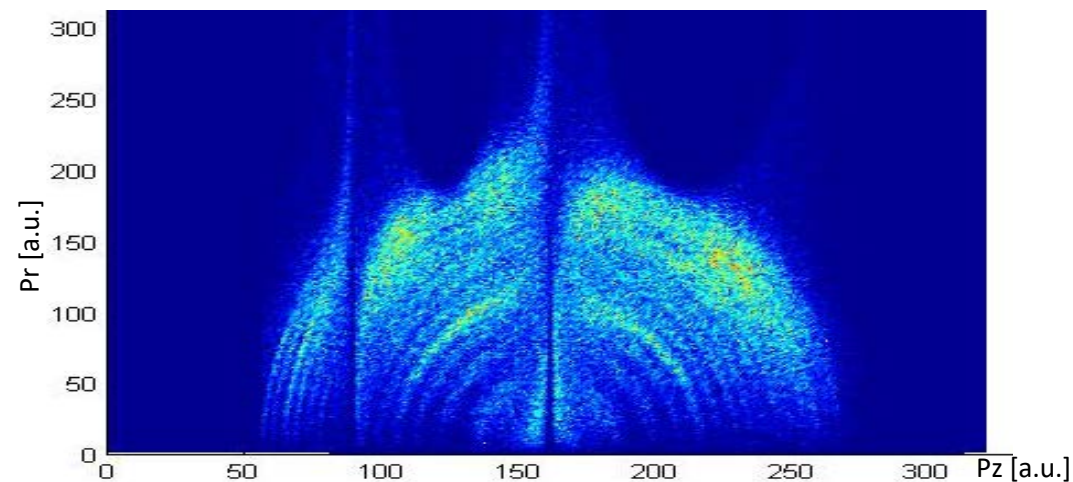
Photoelectron-photoion coincidence spectrometer



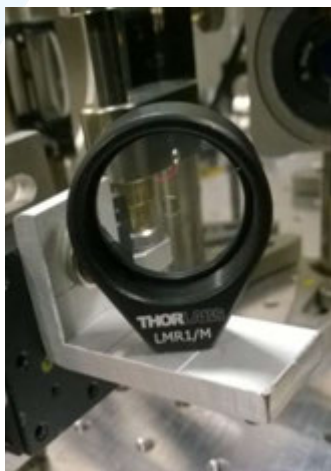
Ions



Electrons

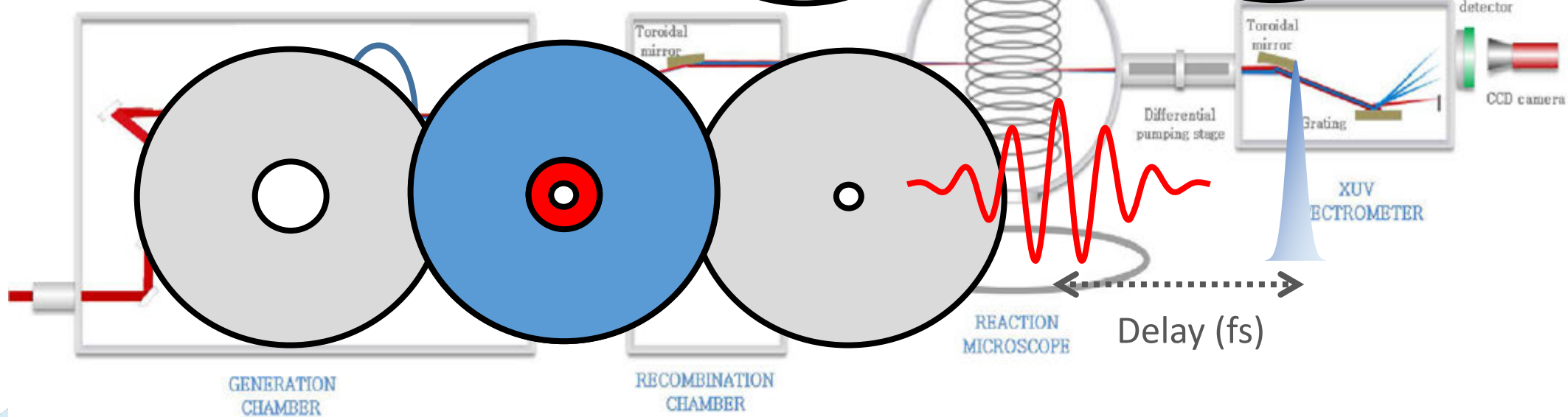
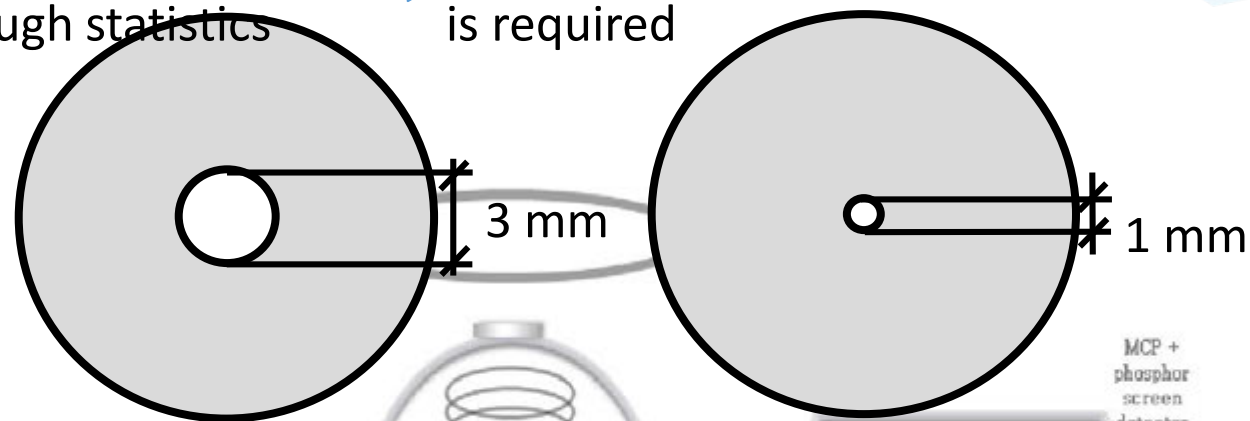


SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS



Problem: long acquisition time in order to have enough statistics

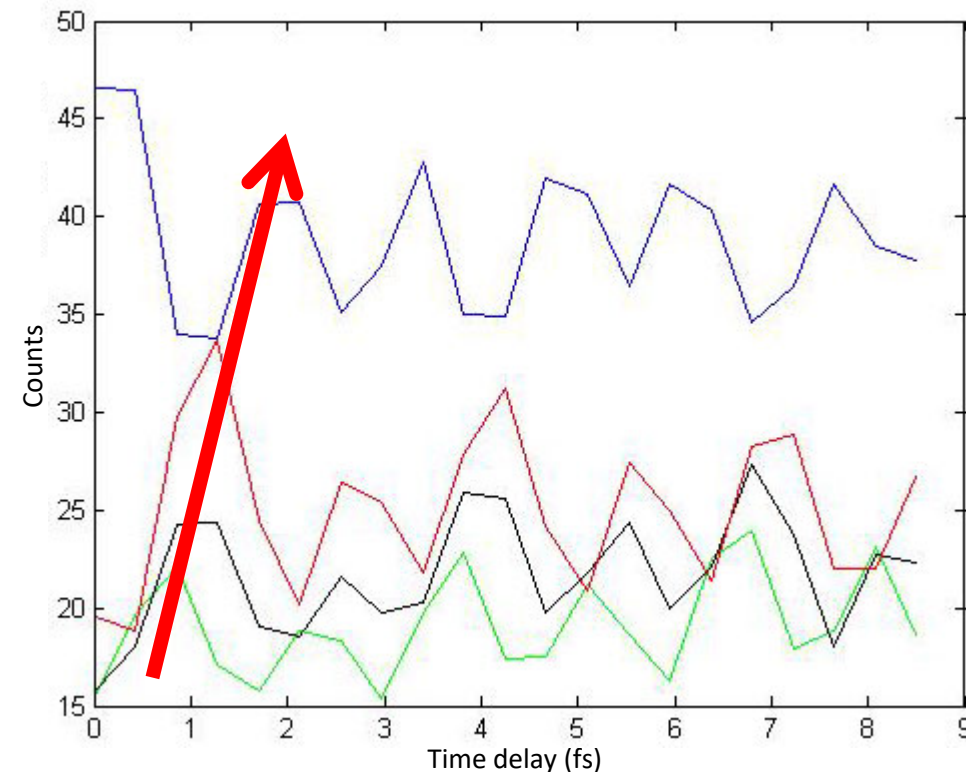
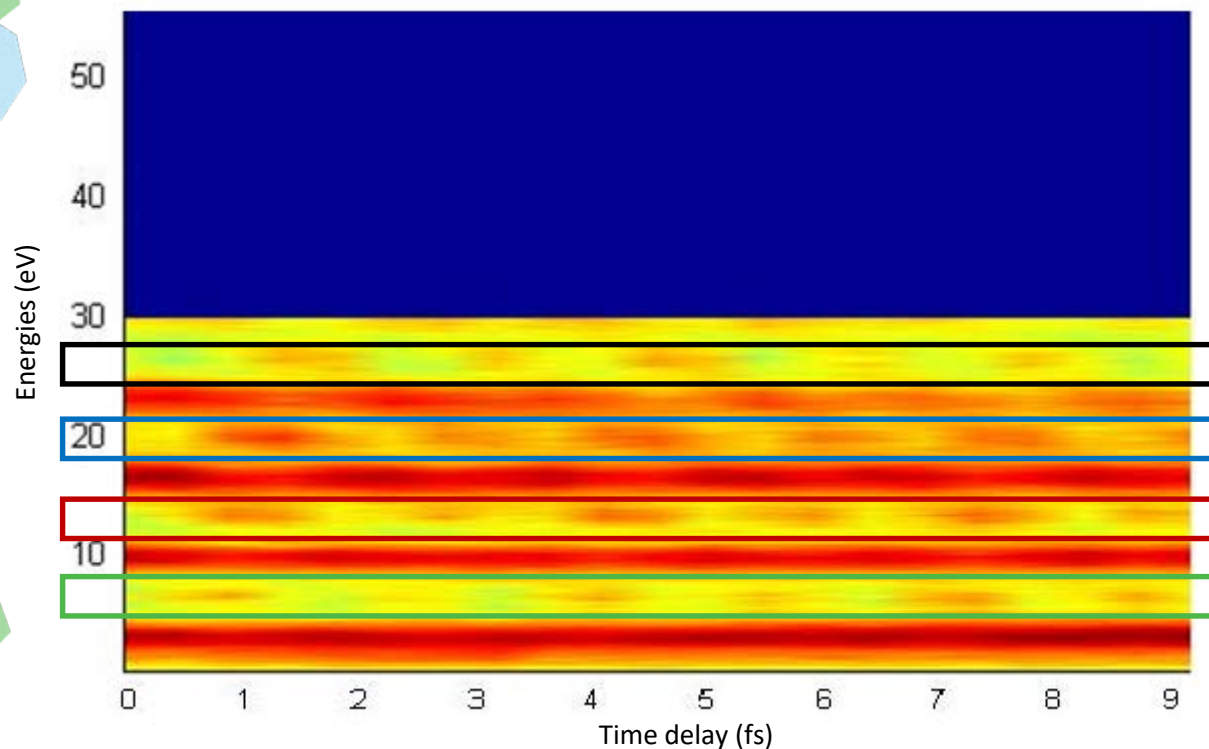
→ Delay stability is required



SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS

Sidebands oscillations

Generation gas: Ar, Jet gas: Ar



Clear and stable sidebands oscillations over one day

SECONDMENTS, OUTREACH ACTIVITIES AND SOFT SKILLS TRAINING

Secondments:

- Politecnico di Milano. Supervisor: Prof. S. Stagira / Prof. G. Sansone.
Data Analysis with REMI
- TRUMPF, Garching. Supervisor: Dr. T. Metzger.
Developing a 100kHz repetition rate laser
- MPI, Heidelberg. Supervisor: Dr. R. Moshhammer.
Data Analysis with REMI

Outreach Activity:

- “E. Breda” Institute in Sesto San Giovanni, Italy

Soft Skills Training:

- Training in outreach activity by EYEST at the Photonics Explorer Kit Training Session
- School in “Innovation and technology management” by Amplitude, October 2017



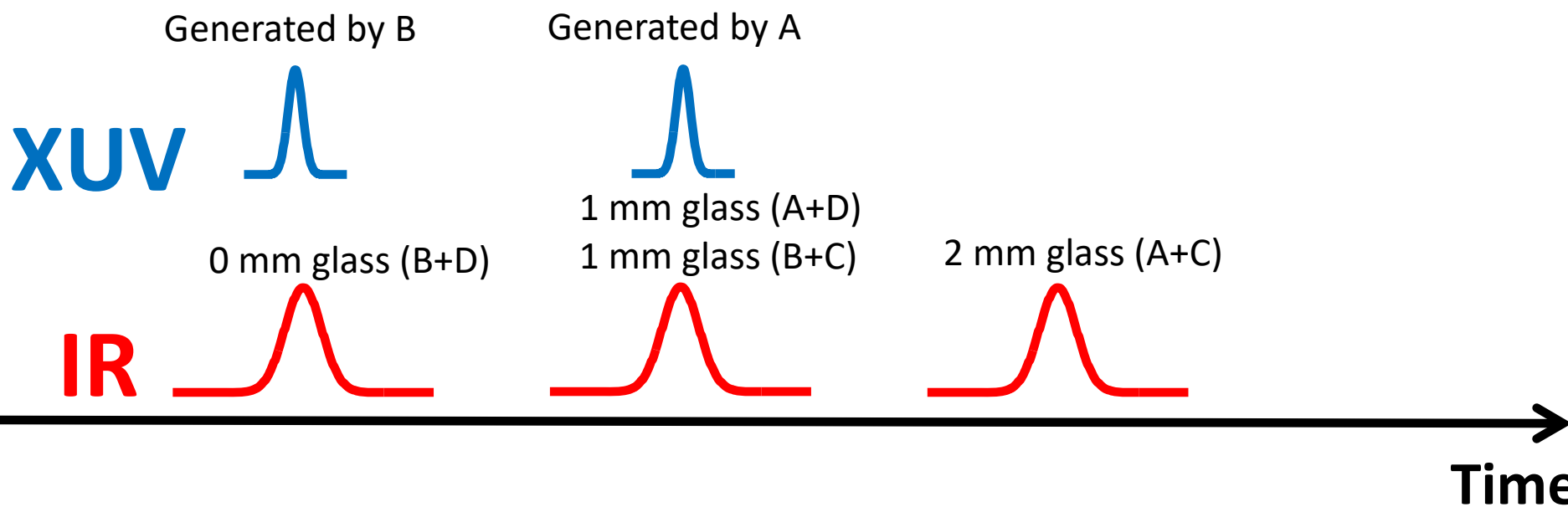
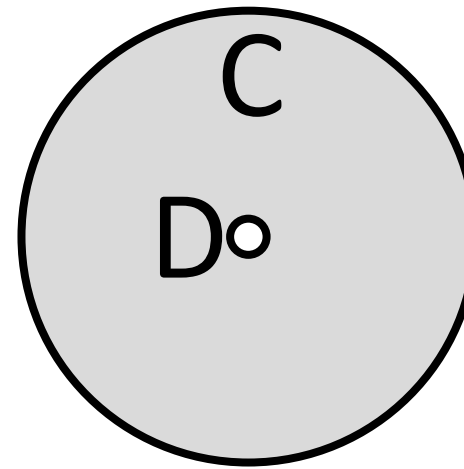
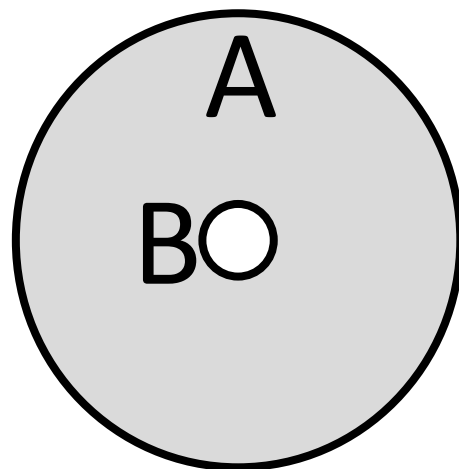
Outreach activity

CAREER DEVELOPMENT PLAN AND FUTURE ACTIVITIES

Future research activities

- Attosecond dynamics in SF₆
- Generation of isolated attosecond pulses and Carrier Envelope Phase stabilization
- Experiment with isolated attosecond pulses in H₂
- Development of a 100kHz attosecond source at Freiburg

SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS

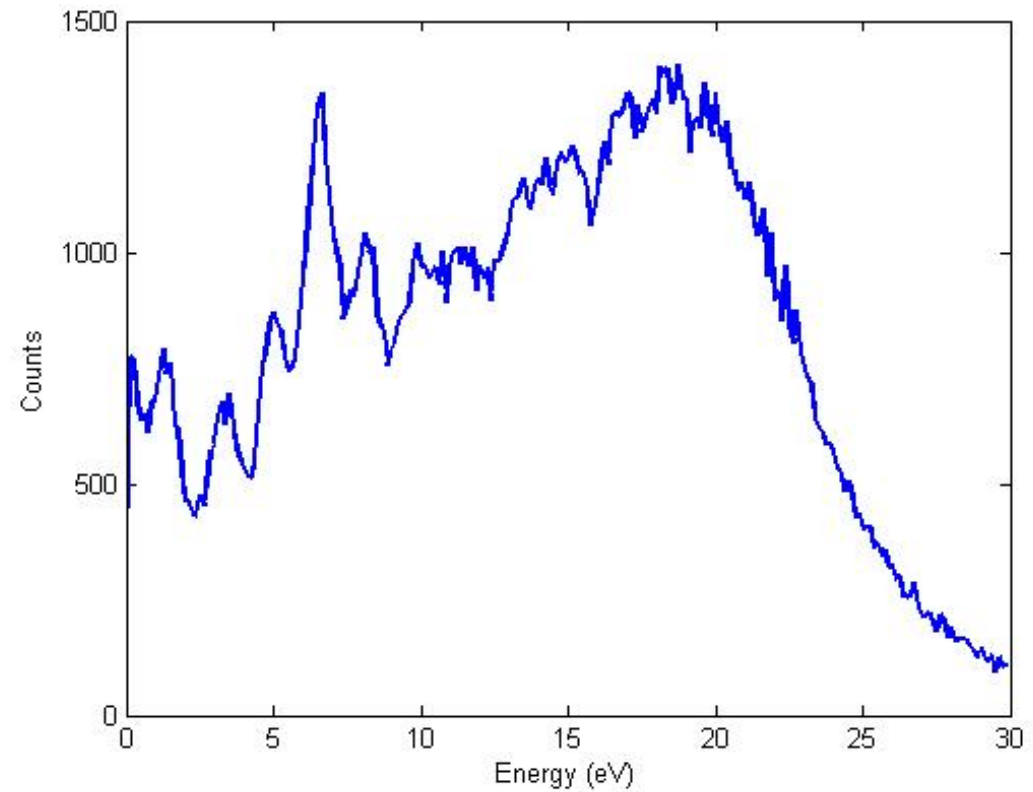


SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS

Ar/SF6

Measure with SF6 as the jet

Gas for generation: Ar, Kr, Xe



SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS

Ar/Ar

