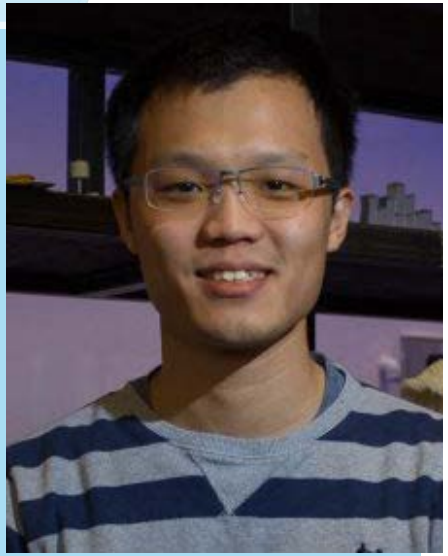

EARLY STAGE RESEARCHER

Yu-Chen Cheng

PROJECT: *High repetition rate attosecond source for experiments with energy, angular and temporal resolution*

Host institution:	Lund University
Supervisors:	Dr. Mathieu Gisselbrecht (LUND)
	Dr. Thomas Binhammer (VENT)
	Dr. Robert Moshammer (MPIK)
Start date:	May, 1st 2015
Research interests:	Atomic and molecular science
	Nonlinear optics
	Ultrafast optics

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 641789

CURRICULUM VITAE

Time | **Applied Laser Intensity**

2015 — **Lund University**

- **PhD student :**
  Development and application of high rep. rate attosecond source

~300 as — **100 TW/cm2**

2013 — **Institute of atomic and molecular sciences**

- **Research Assistance**:
  Supercontinuum generation from thin solid plates

3.5~25 fs — **10 TW/cm2**

2012 — **National Tsing Hua University**

- **Master research**:
  VUV generation with gas mixing and hollow waveguide.

10 ps — **1 TW/cm2**

2006

- **Bachelor degree**: Electrical Engineering

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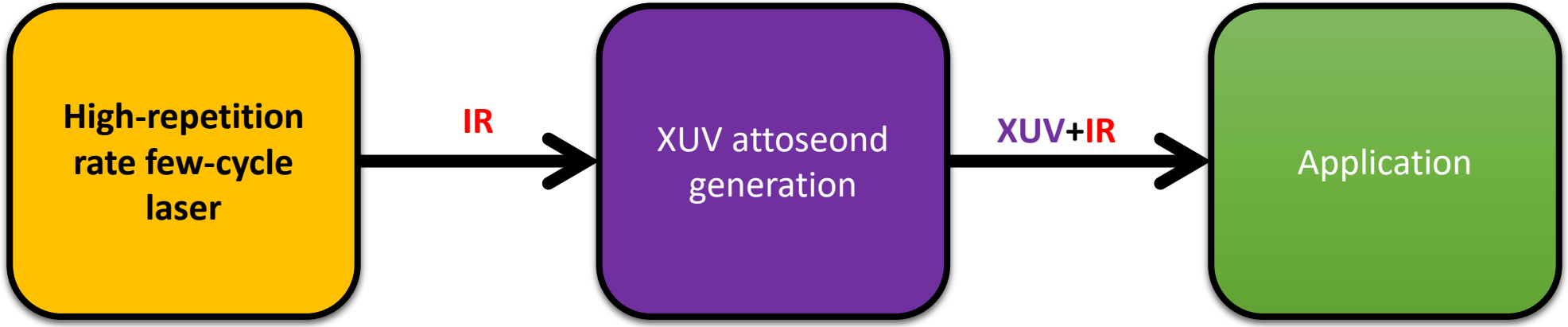
SCIENTIFIC SCOPE OF THE PROJECT

Develop the **high-repetition rate laser** (200 kHz) for electronic correlation and electron-nuclear coupling in small systems.

- The **non-collinear optical parametric chirp pulse amplification (NOPA)** system developed by VENT in collaboration with LUND
- Demonstrate the high repetition rate **XUV attosecond light source** with high harmonic generation (HHG).
- **High repetition rate photoelectron spectroscopy** with full energy, angular and temporal resolution performed with the high repetition rate laser.



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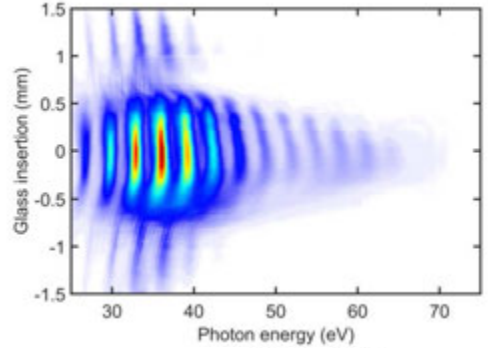
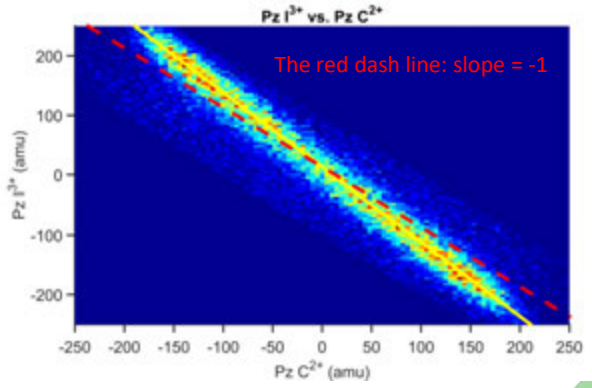
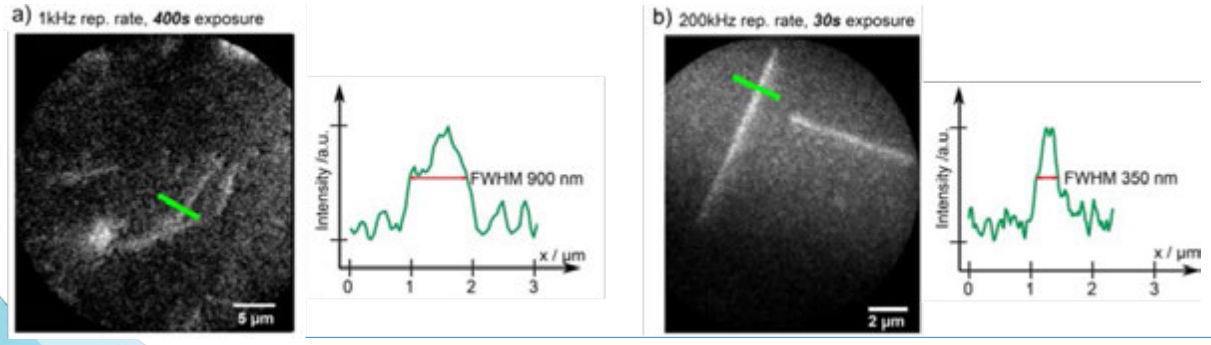
SCIENTIFIC ACTIVITIES AND GOALS IN PROGRESS (**Done**)

- **High-repetition rate laser (200 kHz)**
  - 2 NOPA stages system, CEP stabilized few-cycle laser (< 7 fs), **>5 µJ**.
  - 3rd NOPA to improve the output power
- **High Harmonic generation (HHG) and attosecond pulses**
  - The precise dispersion scan of the XUV spectrum
  - The XUV-IR interferometer
- **Photoelectron spectroscopy/microscopy**
  - Plasmonic on nanostructure (using PEEM)
  - Ultrafast ionization and dissociation dynamics on molecules (using REMI)







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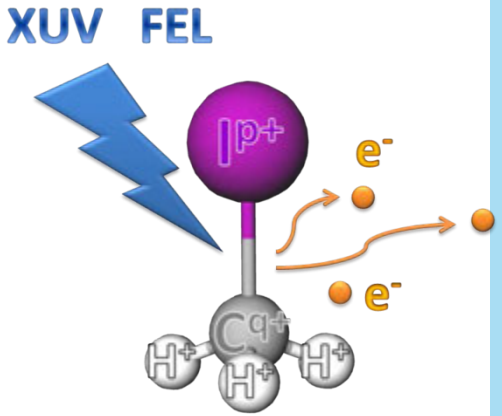
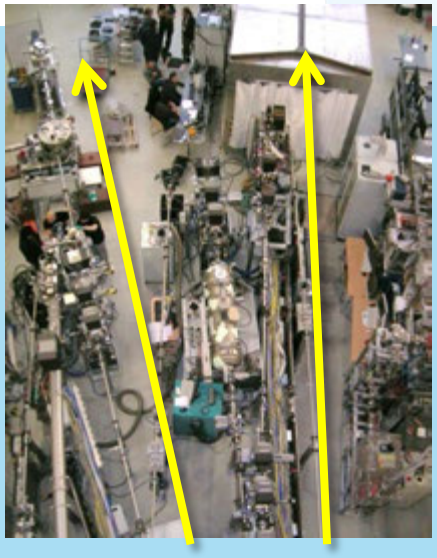
SECONDMENTS AND SCIENTIFIC ACTIVITIES

- **Secondment**
  - Free Electron Laser (**FEL**) beam time with **MPIK** in **FLASH**
  - Sequential multiphoton process of the CH_3I (presented at the Gordon conference - 2016)
- **Lund CIEL:** Development of recoil spectrometer for coincidence measurements at Lund Laser Center.
  - **Compact and a large volume of homogeneous magnetic field**
  - **CIEL Design -** without magnetic nodes to have a better average resolution of the electron.





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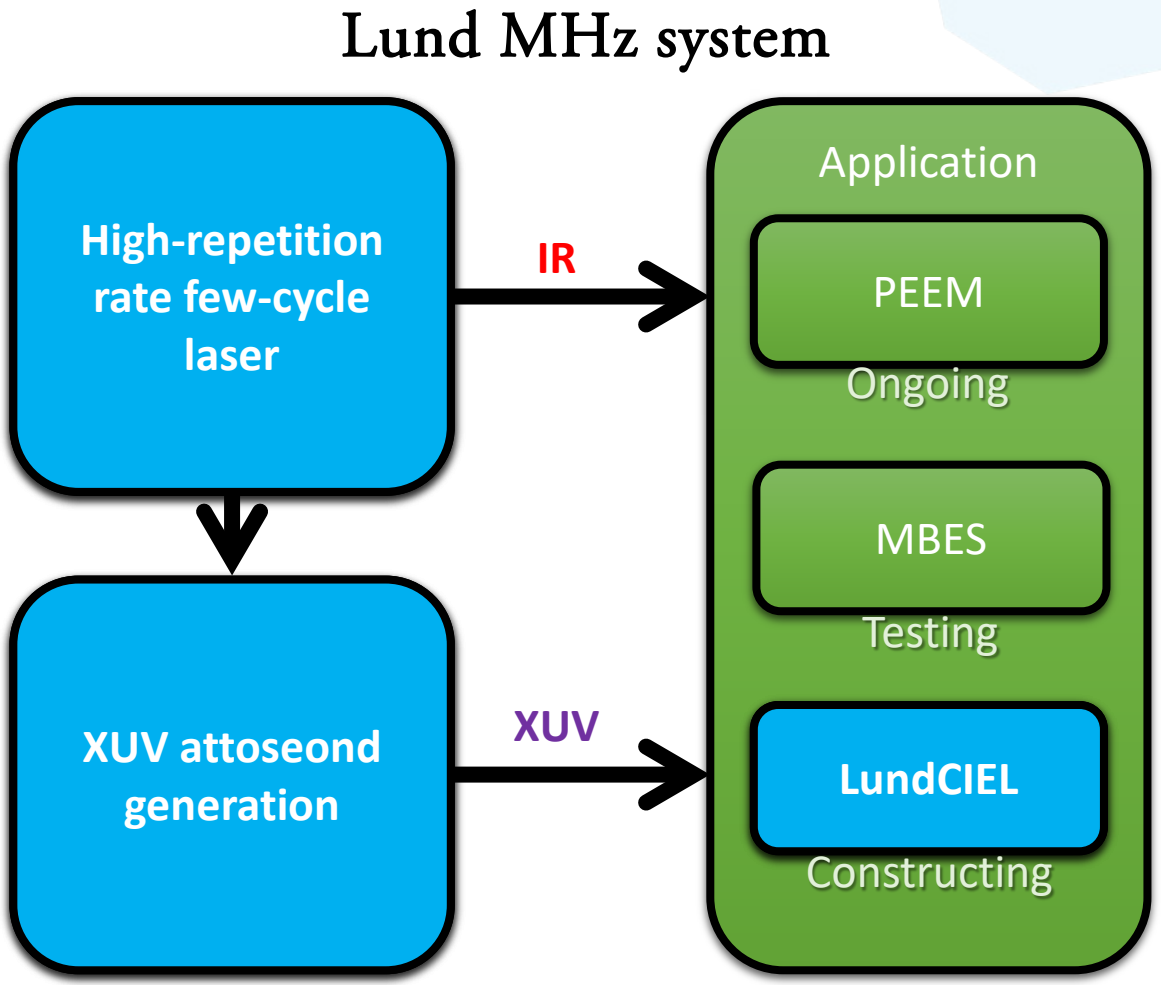
CAREER DEVELOPMENT PLAN AND FUTURE ACTIVITIES

- **Scientific activities**:
  - **Advanced Data Treatment**
  - **Molecular beam**
  - **High pulse energy OPCPA**

- **Soft skills**:
  - Teaching
  - Computerized program
  - **Academic writing**
  - **Other training courses**



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