

# Research, Informatics and Graduate Studies

<https://sites.gtiit.edu.cn/research/positions/gs-2020008/>

## PhD Position in Strong Field phenomena driven by waveforms (GS-2020008) – Group of Assoc. Prof. DSc. Dr. Marcelo Ciappina

The Physics Program (group of Associate Professor DSc. Dr. Marcelo Ciappina) is looking for 1 PhD student to conduct theoretical research projects in attosecond physics. Contract duration: 3 + 1 years.

### Project Details

Third-generation femtosecond technology (3FST) offers the potential for femtosecond light tunable over several octaves, multi-terawatt few-cycle pulses, and synthesized multi-octave light transients. Unique tunability, temporal confinement, and waveform variety in combination with unprecedented average powers will extend nonlinear optics and laser spectroscopy to previously inaccessible wavelength domains, ranging from the far IR to the x-ray regime. The underlying concepts, technologies, and proof-of-principle experiments are being currently explored in several laboratories around the world. A conceptual design study of a prototypical tunable and wideband source demonstrates the potential of 3FST for pushing the frontiers of femtosecond and attosecond science. The consequences, from a theoretical viewpoint, of the utilization of these laser sources to drive strong field phenomena are still unexplored. Only few attempts have been done so far, but still many questions remain to be answered.

The aim of this project is to theoretically study strong field phenomena, for example high-order harmonic generation (HHG), above-threshold ionization (ATI) and multiple ionization, driven by multi-octave light transients and to explore the ultimate limits, under the guidance of experimental colleagues.

### Keywords

Strong field phenomena, ultrafast optics, numerical modeling, attosecond physics.

### Selection Criteria

- Master degree (or equivalent) in Physics or Atomic Physics (essential)
- Strong background in atomic physics (preferable)
- Strong interest in numerical modeling (essential)
- Strong interest in programming (essential)
- Strong interest to work temporarily at research institutes in China, Europe and Israel (essential)
- Good communication skills, good command of English (essential)
- Ability to work independently as well as in a team environment (essential)
- Ability to author scientific reports and co-author scientific publications (essential)
- The PhD candidate must fulfill the requirements for admission to the Technion Graduate School and needs to comply with its regulations leading to the PhD/Master degree: <https://graduate.technion.ac.il/en/prospective-students/>

### Position

PhD

### Program

Physics

### Research Area

Strong Field phenomena driven by waveforms

### Contact

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[Web Page Link](#)

### Application Deadline

Open till filled

### Date Posted

14 October 2020

### Location

Guangdong Technion – Israel Institute of Technology (GTIIT), China & Technion-Israel Institute of Technology, Israel.

### [Fees & Finance](#)

how to apply