

# Research, Informatics and Graduate Studies

<https://sites.gtiit.edu.cn/research/positions/rf-2020006/>

## Research Fellow Position in Atto-nano Physics -group of Associate Professor DSc. Dr. Marcelo Ciappina (RF-2020006)

### Description

The Physics Program (group of Associate Professor DSc. Dr. Marcelo Ciappina) is looking for 2/3 scientists to lead theoretical research projects in attosecond physics at the nanoscale related to future ultrafast switching devices and strong field driven phenomena in condensed matter. Contract duration: 1 year with possible extension.

### Project Details

Recently two emerging areas of research, attosecond and nanoscale physics, have started to come together. Attosecond physics deals with phenomena occurring when ultrashort laser pulses, with duration on the femto- and sub-femtosecond time scales, interact with atoms, molecules or solids. The laser-induced electron dynamics occurs natively on a timescale down to a few hundred or even tens of attoseconds (1 attosecond = 1 as =  $10^{-18}$  s), which is comparable with the optical field. For comparison, the revolution of an electron on a 1s orbital of a hydrogen atom is  $\sim 152$  as. On the other hand, the second branch involves the manipulation and engineering of mesoscopic systems, such as solids, metals and dielectrics, with nanometric precision. Although nano-engineering is a vast and well-established research field on its own, the merger with intense laser physics is relatively recent. The aim of the research project is to numerically model the interaction of strong fields with different targets, including plasmonic nanostructures, bulk matter, exotic materials, etc. The ultimate goal is to predict new behaviours in the driven materials and propose experiments able to, for instance, capture the electron dynamics in its natural time and spatial scale.

### Keywords

Attosecond physics, strong fields, condensed matter, plasmonics, ultrafast optics, nanoscale physics, high-performance computing, multiscale modeling.

### Selection Criteria

- PhD degree in Physics (essential)
- Strong background in strong field physics (preferable)
- Strong interest in numerical modeling (essential)
- Strong interest in high-performance computing and coding (essential)
- Strong interest in condensed matter physics (essential)
- Strong interest to collaborate with colleagues in China, Europe, United States, South Korea and/or 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 scientific publications (essential)
- Ability to mentor PhD students (preferable)

### Position

Research Fellow (Postdoctorate)

### Program

Physics

### Research Area

Atto-nano Physics

### Contacts

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Marcelo Ciappina

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[Web Page Link](#)

### Application Deadline

Open till filled

### Date Posted

14 October, 2020

## **Benefits**

- Salary range: up to \$49,020 / year (depending on qualifications of the candidate)
- Subsidized housing at GTIIT, China
- Health insurance: regular cover for Chinese citizens or private health insurance for foreigners
- Professional conference travel allowance
- Reallocation costs

## **Application**

- Application deadline: **open till filled**
- Send below required documents electronically to: [marcelo.ciappina@gtiit.edu.cn](mailto:marcelo.ciappina@gtiit.edu.cn)
  1. Curriculum vitae and personal statements
  2. A publication list
  3. Three letters of recommendation (one from the mentor for PhD and/or Master's studies)
  4. A short research plan outline (up to one page in length)
  5. Degree certificates with certified English translation for both the PhD and Master's degrees