

Research, Informatics and Graduate Studies

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PhD Position in Soft Matter and Biological Physics – group of Prof. Xinpeng Xu (GS-2018004)

The Physics Program at GTIIT (the theory group of Prof. Xinpeng Xu) is looking for 1-2 PhD students to conduct theoretical and computational research projects in soft matter and biological physics. Contract duration: 3 + 1 years for PhD.

Project Details

Soft matter and biological physics: Our group study the structure, phase behavior and dynamics of systems such as drops, polymer solutions, polymer gels, colloidal suspensions, bacterial suspensions, and animal cells, using the approaches of statistical thermodynamics. Through our interactions with experimental groups, the theory is applied to problems of wetting dynamics, microphase separation, elasticity of polymer gels, self-assembly in active suspensions, mechanical interactions between cells and between cells and their extracellular matrix, mechanical aspects of tissue morphogenesis etc.

Depending on the interests of the applicant the project could be mainly theoretical or combination of numerical simulations with analytical works; and would focus on one of the following two distinct yet related research areas:

The first concerns “active” soft matter, maintained far from equilibrium by internal energy sources, e.g., swarms of self-propelled colloidal particles or microbes. The main aim is to pursue a physical understanding of active dynamics, hydrodynamic interactions, and rheology taking place in the complex environments that are relevant to biological suspensions.

The second concerns the mechanical aspects of animal cells & tissues. This project belongs to the emerging research field – “mechanobiology” at the interface of biology and engineering, which aims to understand how physical forces and changes in the mechanical properties of cells and tissues contribute to development, cell differentiation, physiology, and disease. Our group focuses on the mechanical (particularly elastic) interactions between cells and their extracellular matrix, matrix-mediated cell-cell interactions, self-organization (say, morphogenesis) of cellular assemblies like cell arrays and cellular mono- and multiple-layers etc.

Keywords

Soft matter, biological physics, active matter, mechanobiology, cell mechanics; drops, polymers, gels, colloidal suspensions, bacteria, cells.

Selection Criteria

- Master degree (or equivalent) in Physics, Biophysics or in a related subject (essential)
- Strong background in soft condensed matter physics (preferable)

Program

Physics

Research Area

Soft Matter and Biological Physics

Contact

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Application Deadline

Open till filled

Date Posted

2 March 2018

Location

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

[Fees & Finance](#)

how to apply

- Strong interest in biological physics (essential)
- Strong interest to work with experimental groups (essential)
- Good communication skills, good command of English (essential)
- Basic programming skills (e.g., Fortran, C, C++, Matlab) (preferable)
- 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 degree:

please click [here](#).