Work Experiences

Material Science, Computational Simulation, Programming, Data Science

I. Postdoctoral Researcher, University of Antwerp, Antwerp, Belgium, 10/ 2021 - 01/2023

- Mathematical and computational modelling of disordered materials,
- Using quantum simulations to develop new heterostructured materials,
- Developing, testing and maintaining python codes for electrical properties of materials.

II. Doctoral Researcher, University of Antwerp, Belgium, 03/2017 - 10/2021

- Developing computational models for Nano-materials using statistics and quantum physics,
- Python and Mathematica simulation of particle quantum behaviour in materials,
- High-performance parallel quantum computing to investigate 2D semiconductor nanoribbo using the DFT method within the Ab initio Simulation Package VASP,
- Data analysis and visualization, as well as publishing the result in international journals.

III. Visiting Researcher, Institute for Research in Fundamental Sciences, Tehran, 02/2016 - 02/2017

- Developing mathematical models for studying particle statistics and hydrodynamics,
- Computational modeling of the effect of electron scattering on the electrical conductivity.

IV. Visiting Researcher, Uppsala University, Uppsala, Sweden, 10/ 2015 - 01/ 2016

- Nanoscale scale modelling of 2D materials using Quantum ESPRESSO,
- Electronic-structure quantum calculations for semiconductor.

Optical Engineering: Design & Development, Image Processing, Characterization

I. Optical Design & Development, University of Antwerp, Antwerp, Belgium, 01/2020 - 3/2021

- Developing functional alpha prototypes (proof-of-concept model), beta Prototype and final testing and controlling the quality. As two examples:
  1) Constructing a well-developed *Schlieren Photography* Setup (see my YouTube channel),
  2) Constructing a levitated water fountain and stroboscopic setup to demonstrate optical illusions' influence on perception and their correlation with light frequency variations.

II. Optical Design, Institute for Advanced Studies in Basic Science, Iran, 04/2014 - 09/ 2015

- Designing optical setups to show amazing optical phenomena to the public during the 2015 International Year of Light. These include Holography, Moire, Polarization, Interference Diffraction, and Dispersion, to name a few.

III. Optical Metrology, Image Processing, Characterization, University of Tehran, 05/2008 – 08/2009,

- Measuring the Thickness of solar cells thin film using Tölansky interferometry technique,
- Measurement of thin film Roughness by interferometric pattern image processing,