# Saeed Sarpas


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✣ Personal Information:

Place of Birth: Karaj, Iran
Date of Birth: 22 May 1989
Nationality: Iranian

✣ Language Skills:

Persian: Native, English: Fluent, German: Basic (A1)

## ● Academic Qualification

**Master of Science (M.Sc.) in Astrophysics** — Since Oct 2014
Argelander-Institut für Astronomie, University of Bonn, Germany

**Accepted for Master of Science (M.Sc.) in Physics, Complex systems** — Oct 2013 — Mar 2014
Shahid Beheshti University, Tehran, Iran
I left this program after one semester to join the M.Sc. in Astrophysics at University of Bonn.

**Bachelor of Science (B.Sc.) in Physics** — Oct 2008 — Aug 2013
Shahid Beheshti University, Tehran, Iran

**Pre-university Degree in Mathematics and Physics** — Jun 2007
Shahid Soltani (NODET) high school, Karaj, Iran

**Summer School of National Olympiad in Astronomy and Astrophysics** — Jun — Aug 2005
Young Scholar Club (YSC), Tehran, Iran
Only 24 out of more than 6000 participants were accepted.

**Passed NODET high school entrance exam** — Aug 2003
National Organization For Development of Exceptional Talents
Only 16 out of more than 8000 participants were accepted.

## ● Master Thesis

**Discreteness effects in N-body simulations of cosmological structure formation** — ECD: Mar 2017
Argelander-Institut für Astronomie, University of Bonn, Germany
Supervisor: Prof. Dr. Cristiano Porciani

Cosmological N-body simulations solve the collisionless Boltzmann equation in an approximate way by sampling phase-space with discrete particles and computing the gravitational interactions between them. This (macro-)particles are many orders of magnitude more massive than any plausible dark-matter candidate and it is thus necessary to fine tune the force resolution in order to suppress few-body relaxation effects. All this might corrupt the output with unphysical components ranging from the contamination of physical quantities with Poisson noise to the creation of spurious halos. In this project, we quantify the importance of discreteness effects by finding and comparing “matching-halos” in a set of cosmological simulations with different mass and force resolutions but identical initial conditions. Our results show a tight relationship between the number of particles in a virialized halo and the accuracy of the most of its properties.

## ● Internship

**A C code to the matter power spectrum**
Argelander-Institut für Astronomie, University of Bonn, Germany — Nov 2015 — Feb 2016
Supervisor: Prof. Dr. Cristiano Porciani

A modular C code for calculating the matter power spectrum of a given field, extendable to calculate bi-spectrum. For developing this code, I used Test-Driven Development (TDD) which makes the programmer confident of the code accuracy by writing tests before implementation.

## ● Talks

**A C code to the Matter Power Spectrum**
Argelander-Institut für Astronomie, University of Bonn, Germany — 29 Feb 2016

**Discreteness Effects in Cosmological N-Body Simulations**
ETH Zürich, Institute for Astronomy, Switzerland — 30 Jan 2017

**Discreteness Effects in Cosmological N-Body Simulations**
Argelander-Institut für Astronomie, University of Bonn, Germany — 31 Jan 2017

## ● Professional Experience

**Teaching Assistant** (Argelander-Institut für Astronomie, University of Bonn, Germany) — Apr — Sep 2016
Organized tutorial classes and solved problems for graduate-level course Astrophysics of Galaxies

**Teaching Assistant** (Argelander-Institut für Astronomie, University of Bonn, Germany) — Oct 2015 — Mar 2016
Organized tutorial classes, solved problems and evaluated tests for graduate-level course Cosmology

## ● Technical Experience

**Simulation of gravitational N-body systems fully implemented on graphics processing units with CUDA C**
Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran — Apr 2012
Presented in the 16th annual meeting on research in Astronomy

## ● Bachelor Thesis

**Simulating star clusters with NBODY6**
Shahid Beheshti University, Tehran, Iran — Apr 2013
Supervisor: Assoc. Prof. Dr. Sadegh Movahed

In this project, in addition to running sample simulations using NBODY6, we studied different numerical methods for solving linear differential equations suitable for direct N-body simulations.

## ● Technical Skills

**Programming Skills**
Expert in C, Python, JavaScript, Shell script
Advanced in C++, Java, Ruby, PHP, Clojure and parallel programming using CUDA C, OpenMp and MPI
Familiar with Fortran, Scheme, Lisp, ML

**Web Development**
Expert in AngularJS, Ruby on Rails, Node.js (familiar with react, om, meteor)
Advanced knowledge in relational database design, SQL, NoSQL

**Theoretical Computer Science**
Skilled in algorithm, data structure, various programming paradigms, test/behavior-driven development and continues integration

## ● Work Experience

**Web Developer** (Ambient Innovation, Cologne, Germany)
Using web development technologies, such as Ruby on Rails and AngularJS 2, as a part-time employee my task is to develop and maintain web applications.
Jan 2017 — present

**Web Developer** (Appcube GbR, Bonn, Germany)
Using web development technologies, such as AngularJS, Node.js and Java EE, as a part-time employee my task was to develop and maintain a few mobile and desktop applications.
Apr 2015 — Aug 2016

**Web Developer** (Kelasi non-profit organization, Karaj, Iran)
Developing an information management social network, inspired by version control ideas.
Apr 2013 — Apr 2015

**Astrophysics Olympiad Teacher** (NODET high schools, Iran)
Teaching different Astrophysics topics to talented high school students to prepare them for the International Olympiad on Astronomy and Astrophysics (IOAA)
2005 — 2014

**Astrophysics Olympiad Teacher** (Salam Schools Complex, Tehran, Iran)
2010 — 2014

## ● Honors & Awards

**Silver medal of the $1^{st}$ national olympiad on Astronomy and Astrophysics**
Young Scholar Club (YSC), Tehran, Iran
Aug 2005

**Awarded the annual grant for the elite university students from INEF**
Iran's National Elites Foundation
Oct 2008 — Oct 2009

**Member of INEF**
Iran's National Elites Foundation
Since 2008

## ● Workshops & Conferences

**8th Bethe Center Workshop: Particle Physics Meets Cosmology** (Physikzentrum Bad Honnef, Germany) 10 — 14 Oct 2016

**BCGS Weekend Seminars** (Physikzentrum Bad Honnef, Germany) 22 — 24 Apr 2016

**BCGS Weekend Seminars** (Physikzentrum Bad Honnef, Germany) 17 — 19 Apr 2015

**High Performance Computing, HPC5** (Institute for Research in Fundamental Sciences, IPM, Tehran, Iran) 12 — 18 Feb 2013

**Cloud Computing** (Institute for Research in Fundamental Sciences, IPM, Tehran, Iran) 1 — 2 Mar 2012

**Thinking in GPU** (Institute for Research in Fundamental Sciences, IPM, Tehran, Iran) 11 — 12 Jul 2011

**GPU Programming** (Institute for Research in Fundamental Sciences, IPM, Tehran, Iran) 27 May 2010