

# Rinat Tagirov

RESEARCH ASSOCIATE

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## Education

### ETH Zürich (Swiss Federal Institute of Technology Zürich)

Zürich, Switzerland

DOCTOR OF SCIENCES

Sep. 2011 - Oct. 2016

- Thesis Title: Physical Understanding of Solar Irradiance in UV and Radio Wavelengths.
- Scientific Advisors: Dr. Alexander Shapiro, Prof. Dr. Werner Schmutz

### Saint-Petersburg State University

Saint-Petersburg, Russia

SPECIALIST DIPLOMA IN ASTRONOMY

Sep. 2006 - Jun. 2011

- Thesis Title: Physical Conditions in Molecular Clouds at High Redshifts.
- Scientific Advisor: Dr. Alexandre Ivanchik

## Skills

**Science** NLTE Radiative Transfer, Solar Irradiance Modeling

**Programming** Fortran, Python, Bash, LaTeX, IDL

**Languages** Russian, English, German (basic)

## Experience

### Imperial College London

London, UK

RESEARCH ASSOCIATE

Oct. 2016 — PRESENT

- Developed NESSY for its implementation in 1.5D solar irradiance calculations, which included:
  - implementation of mixed NLTE/LTE calculations in NESSY;
  - merging the ATLAS9 code with the NLTE block of NESSY.

### Physical Meteorological Observatory Davos

Davos, Switzerland

PHD STUDENT

Sep. 2011 — Sep. 2016

- Implemented accelerated  $\Lambda$ -iterations in the stellar radiative transfer code NESSY.
- Improved a method for derivation of CLVs of solar brightness from solar eclipse observations.
- Applied this method to PREMOS/PICARDS solar eclipse data.
- Compared the derived CLVs to the ones calculated with NESSY in order to test 1D models of solar atmosphere.
- Applied NESSY to calculate and analyze the facular and spot contrasts.
- Used these contrasts to model the solar irradiance in UV and radio and analyze the correlation between the two.

### Ioffe Physical-Technical Institute

Saint-Petersburg, Russia

INTERNSHIP

Sep. 2010 - Jun. 2011

- Improved a method for calculating particle concentration in molecular clouds at high redshifts.
- Using this method together with observations of carbon atom fine-structure lines:
  - calculated the CMB temperature in two molecular clouds associated with quasars J0812+3208 and Q1232+082;
  - calculated the hydrogen molecular fraction in these clouds.
- Estimated the UV radiation background and electron concentration in their inner parts.

## Teaching

### Faculty of Natural Sciences

Imperial College London

YEAR 1 PROJECT SUPERVISOR

Jan. 2017 — May 2017

- Was in charge of two first year students who worked as a pair.
- Their project was concerned with the identification of active regions (spots and faculae) on the solar surface.
- Images from HMI/SDO were analysed using Python image processing tools.

### Department of Mechanical Engineering

ETH Zürich

LABORATORY PRACTICUM ASSISTANT

Sep. 2013 — Dec. 2014

- Conducted the laboratory experiment practice instruction for about 25 students each semester.
- Marked the lab experiment reports.

## Department of Physics

PHYSICS III COURSE ASSISTANT

- Conducted exercise classes on optics, statistical mechanics and quantum mechanics for a group of about 20 students.
- Marked the exercise sheets.

ETH Zürich

Sep. 2012 — Feb. 2013

## Department of Physics

PHYSICS II COURSE ASSISTANT

- Conducted exercise classes on classical mechanics for a group of about 20 students.
- Marked the exercise sheets.
- Shared the role with one more assistant.

ETH Zürich

Jan. 2012 — May 2012

## Honors & Awards

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### INTERNATIONAL

2017	<b>Finalist</b> , DEFCON 25th CTF Hacking Competition World Final	Las Vegas, U.S.A
2014	<b>Finalist</b> , DEFCON 22nd CTF Hacking Competition World Final	Las Vegas, U.S.A
2013	<b>Finalist</b> , DEFCON 21st CTF Hacking Competition World Final	Las Vegas, U.S.A
2011	<b>Finalist</b> , DEFCON 19th CTF Hacking Competition World Final	Las Vegas, U.S.A
2012	<b>6th Place</b> , SECUINSIDE Hacking Competition World Final	Seoul, S.Korea

### DOMESTIC

2015	<b>3rd Place</b> , WITHCON Hacking Competition Final	Seoul, S.Korea
2013	<b>Silver Prize</b> , KISA HDCON Hacking Competition Final	Seoul, S.Korea
2013	<b>2nd Award</b> , HUST Hacking Festival	S.Korea
2010	<b>3rd Award</b> , HUST Hacking Festival	S.Korea
2012	<b>3rd Award</b> , Holyshield 3rd Hacking Festival	S.Korea
2011	<b>2nd Award</b> , Holyshield 3rd Hacking Festival	S.Korea
2011	<b>5th Place</b> , PADOCON Hacking Competition Final	Seoul, S.Korea

## Presentation

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### 6th CodeEngn (Reverse Engineering Conference)

Seoul, S.Korea

PRESENTER FOR <DEFCON 20TH : THE WAY TO GO TO LAS VEGAS>

Jul. 2012

- Introduced CTF(Capture the Flag) hacking competition and advanced techniques and strategy for CTF

### 6th Hacking Camp - S.Korea

S.Korea

PRESENTER FOR <METASPLOIT 101>

Sep. 2012

- Introduced basic procedure for penetration testing and how to use Metasploit

## Publications

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### A Guide for Developers in Start-up

Facebook Page

FOUNDER & WRITER

Jan. 2015 - PRESENT

- Drafted daily news for developers in Korea about IT technologies, issues about start-up.

### AhnLab

S.Korea

UNDERGRADUATE STUDENT REPORTER

Oct. 2012 - Jul. 2013

- Drafted reports about IT trends and Security issues on AhnLab Company magazine.

## Program Committees

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2016	<b>Problem Writer</b> , 2016 CODEGATE Hacking Competition World Final	S.Korea
2013	<b>Organizer &amp; Co-director</b> , 1st POSTECH Hackathon	S.Korea
2012	<b>Staff</b> , 7th Hacking Camp	S.Korea
2012	<b>Problem Writer</b> , 1st Hoseo University Teenager Hacking Competition	S.Korea
2012	<b>Staff &amp; Problem Writer</b> , JFF(Just for Fun) Hacking Competition	S.Korea