

### Education

- Oct 2018–now **Ph.D. studies in Theoretical Physics**, *Institute of Nuclear Physics Polish Academy of Sciences*, Kraków, Poland
- Aug 2014–Jul 2016 **M.Sc. in Physics**, *Department of Physics, Savitribai Phule Pune University*, Pune, India  
Dissertation: Cosmological Bell test experiment, Dept. of Theoretical Physics, TIFR, India. Supervisor: Dr. Sayantan Choudhury
- Jul 2009–May 2013 **B.Tech in Electronics and Communication Engineering**, *GNIT, West Bengal University of Technology*, Kolkata, India  
Dissertation: Multiuser Detection in CDMA Systems. Supervisor: Prof. Surajit Basak

### Participation in research projects

- Sep 2021–now **Researcher**, “*Description of relativistic heavy-ion collisions in the large baryon density regime*”, *Polish National Science Center Research Grant SONATA BIS 8, No. 2018/30/E/ST2/00432, G41554*, PI: dr. hab. prof. IFJ PAN Radoslaw Ryblewski
- Nov 2018–Oct 2020 **PhD student fellowship**, “*New theories of relativistic hydrodynamics for strongly interacting matter*”, *Polish National Science Center Research Grant OPUS12, No. 2016/23/B/ST2/00717, G41517*, PI: dr. hab. prof. UJ Wojciech Florkowski

### Research visits

- Upcoming **Centre for Theoretical Physics, Ecole Polytechnique**, France, Host Supervisor: Prof. Cédric Lorcé
- 15–30 Jan 2022 **The Institute for Theoretical Physics, Goethe University Frankfurt**, Germany, Host Supervisor: Prof. Dirk H. Rischke
- 04–14 Dec 2019 **National Institute of Science Education and Research**, India, Host Supervisor: Prof. Amaresh Kumar Jaiswal

### Research internships

- Feb–Jun 2018 **Study of charmless b-hadron decays with the LHCb spectrometer**, *LHCb (CERN) Group, Laboratoire de Physique de Clermont, Université Clermont Auvergne*, Clermont-Ferrand, France, Supervisor: Prof. Eric Cogneras
- Jun–Jul 2017 **Basic simulation of s- and r- processes in stars and formation of heavy elements**, *Manipal Centre for Natural Sciences, Manipal University*, Manipal, India, Supervisor: Dr. Santosh Roy
- Jun–Jul 2013 **Wavelet transform and cryptography**, *Dept. of Physical Sciences, Indian Institute of Science Education and Research*, Kolkata, India, Supervisor: Prof. Prasanta K. Panigrahi
- Jun–Jul 2012 **Design of Micro-controller based data acquisition board having data transmission facility through SPI protocol**, *Variable Energy Cyclotron Centre*, Kolkata, India, Supervisor: Dr. Suman K. Guha

### Awards and Fellowships

- 18 Dec 2020 **Best poster prize**, *Awarded on the basis of poster presentation, XXIV DAE-BRNS High Energy Physics Symposium, NISER, India, Online*
- Jan–Jul 2020 **Ph.D. social scholarship**, *Awarded on the basis of 2nd year achievements in PhD, IFJ PAN, Kraków*
- Oct–Dec 2019 **Ph.D. social scholarship**, *Awarded on the basis of 1st year achievements in PhD, IFJ PAN, Kraków*
- Oct 2018–now **Ph.D. fellowship**, *IFJ PAN, Kraków, Poland*
- Sep 2017–Jan 2018 **Scholarship for M2 Univers et particules**, *Université Clermont Auvergne, Clermont-Ferrand, France*
- Jun–Jul 2017 **Summer research fellowship**, *Manipal University, Manipal, India*
- Jun–Jul 2013 **Summer research fellowship**, *Indian Institute of Science Education and Research, Kolkata, India*
- Jun–Jul 2012 **Summer research fellowship**, *Variable Energy Cyclotron Centre, Kolkata, India*

### Invited talks

- 8 Nov 2021 **Relativistic formulation of spin hydrodynamics framework based on GLW spin and energy-momentum tensors**, *XXXIII International Workshop on HEP, Logunov Institute for High Energy Physics, Russia, Online*
- 28 May 2021 **Theory of spin hydrodynamics for ultra-relativistic heavy-ion collisions**, *Workshop on QGP Phenomenology, Institute for Research in Fundamental Sciences, Iran, Online*
- 9 Apr 2021 **Dynamics of spin polarization in the Gubser and Bjorken expanding background**, *Białasówka HEP webinar, AGH University of Science and Technology, Krakow, Online*

### Contributed talks

- 06 Dec 2021 **Spin hydrodynamics: Motivation and Basics**, *Zimanyi School 2021, Budapest, Hungary, Online*
- 03 Nov 2021 **Theoretical aspects of spin hydrodynamics framework**, *Brookhaven Forum 2021: Opening New Windows to the Universe, Brookhaven National Laboratory, USA, Online*

- 23 Sep 2021 **Lambda hyperon spin polarization evolution using spin hydro**, 61 Cracow School of Theoretical Physics, Poland, Online
- 17 Sep 2021 **How can we understand spin polarization of Lambda hyperons using spin hydrodynamics?**, International School of Nuclear Physics, Erice, Sicily
- 06 Aug 2021 **Study of evolution of spin polarization of Lambda hyperons using spin hydrodynamics**, Quark Confinement and the Hadron Spectrum, University of Stavanger, Norway, Online
- 28 Jul 2021 **Quantum baryon number fluctuations in subsystems of a hot relativistic fermionic gas**, HADRON 2021, Universidad Nacional Autónoma de México, Online
- 14 Jul 2021 **Hot debate on spin polarization of Lambda hyperons**, Meeting of the Division of Particles and Fields of the American Physical Society, Florida State University, Online
- 30 Jun 2021 **Vorticity and spin in relativistic heavy-ion collisions**, XI NExT PhD Workshop: Probing fundamental physics at colliders and beyond, University of Sussex, Online
- 17 Jun 2021 **Quantum fluctuations of baryon number density**, HEP 2021: 38th Conference on Recent Developments in High Energy Physics and Cosmology, Aristotle University of Thessaloniki, Greece, Online
- 17 Jun 2021 **Quantum fluctuations of energy in a hot relativistic gas of fermions**, 26th International Symposium on Particle Physics, String Theory, and Cosmology, Center for Theoretical Physics of the Universe, Institute for Basic Science, Korea, Online
- 11 Jun 2021 **“Spin” in relativistic heavy-ion collisions**, XXXII INTERNATIONAL SEMINAR of NUCLEAR and SUBNUCLEAR PHYSICS “Francesco Romano”, Otranto school, Online
- 2 Jun 2021 **Quantum fluctuations in energy for hot relativistic fermionic gas**, XIV International Conference on Nuclear Structure Properties, Selcuk University, TURKEY, Online
- 27 May 2021 **Vorticity and polarization of Lambda hyperons**, STRANU: Hot Topics in STRANGeness NUClear and Atomic Physics, ECT\* Trento, Online
- 19 Jan 2021 **Dynamics of spin polarization using relativistic spin hydrodynamics**, YITP workshop: The Schwinger Effect and Strong-Field Physics, Online
- 10 Jan 2021 **Evolution of spin polarization in the Gubser flow background**, XXVII Cracow EPIPHANY Conference on Future of particle physics, IFJ PAN, Krakow, Online
- 22 Dec 2020 **Lambda spin polarization in QGP**, XI Conference of Young Scientists “Problems in Theoretical Physics”, Online
- 11 Dec 2020 **Spin polarization in Heavy-Ion Collisions**, Zimanyi School 2020, Budapest, Hungary, Online
- 04 Dec 2020 **Relativistic fluid dynamics in ultra-relativistic heavy-ion collisions**, International school for Strangeness Nuclear Physics, J-PARC, Tokai, Ibaraki, Japan, Online
- 29 Oct 2020 **Spin Hydrodynamics for Relativistic Heavy-Ion Collisions**, HoloTube junior workshop, Online
- 24 Aug 2020 **Heavy-Ions and Spin Hydrodynamics**, Hamilton School on Mathematical Physics, The Hamilton Mathematics Institute, Trinity College, Dublin, Online
- 20 Aug 2020 **Formalism of fluid dynamics with spin for Bjorken hydrodynamical background**, A3F-CNS Summer School 2020, Center for Nuclear Study, University of Tokyo, Online
- 31 Jul 2020 **Hydrodynamics formalism with Spin dynamics**, Criticality in QCD and the Hadron Resonance Gas, Institute of Theoretical Physics, University of Wrocław, Online
- 07 Jul 2020 **A new hydrodynamics with spin formalism for the description of polarization effect of Lambda hyperons**, HoloTube talk, Online
- 16 Apr 2020 **Hydrodynamics with Spin**, 20th MCnet meeting, Online
- 27 Feb 2020 **Spin Hydrodynamics for the description of polarization of Lambda hyperons**, International Doctorate School: Frontiers in Nuclear and Hadronic Physics, Galileo Galilei Institute for Theoretical Physics, Florence, Italy
- 06 Dec 2019 **Space-time evolution and description of the spin polarization in the Bjorken hydrodynamical scenario**, Zimanyi School 2019, Budapest, Hungary
- 06 Apr 2019 **Spin polarization dynamics for the Bjorken hydrodynamic background**, XIV Polish Workshop on Relativistic Heavy-Ion Collisions, Krakow, Poland
- 7 May 2018 **Study of charmless b-hadron decays with the LHCb spectrometer**, 4th International School on High Energy Physics ISHEP 2018, Institut d’Etudes Scientifiques de Cargese, France

## Posters

- 10 Jun 2021 **Pseudo-gauge dependence of quantum fluctuations of energy in a hot relativistic fermionic gas**, 9th Edition of the Large Hadron Collider Physics Conference, Online
- 15 May 2021 **Quantum fluctuations of energy in subsystems of a hot bosonic gas**, Condensed Matter and Statistical Physics Symposium, Department of Physics, Presidency University Kolkata, Online
- 12 Jan 2021 **Spin Polarization in QGP**, Initial Stages 2021, Online
- 14–18 Dec 2020 **QGP vorticity and particle spin polarization**, XXIV DAE-BRNS High Energy Physics Symposium, NISER, India, Online
- 18 Nov 2020 **Spin polarization issue in heavy-ions collision**, YITP workshop: Strings and Fields 2020, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan, Online

- 04 Sep 2020 **Hydrodynamics and Spin physics**, *Vienna Summer School on Gravitational Quantum Physics*, University of Vienna, Online
- 27 Aug 2020 **Polarization effect in heavy-ion collisions**, *Hamilton School on Mathematical Physics*, The Hamilton Mathematics Institute, Trinity College, Dublin, Online
- 10–21 Aug 2020 **Fluid dynamics with spin for Bjorken hydrodynamic background**, *48th SLAC Summer Institute*, Online
- 29 May 2020 **Formalism of hydrodynamics with spin degrees of freedom**, *8th Edition of the Large Hadron Collider Physics Conference*, Online
- 28 May 2020 **Understanding spin polarization at RHIC from a new relativistic hydrodynamics framework**, *New Frontiers in Theoretical Physics*, The GGI, Italy, Online
- 15 Sep 2019 **Description of the polarization of particles in the framework of hydrodynamics with spin**, *45th Congress of Polish Physicists*, Krakow, Poland
- 09 Jan 2019 **The Evolution of Spin Polarization for Boost Invariant Hydro-dynamical Background**, *XXV Cracow EPIPHANY Conference on Advances in Heavy Ion Physics*, IFJ PAN, Krakow, Poland

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## Schools attended and industrial experience

- 9–20 Aug 2021 **CFNS Summer School on the Physics of the Electron-Ion Collider**, *Stony Brook University*, USA, Online
- 12–30 Jul 2021 **Methods of Effective Field Theory and Lattice Field Theory**, *Bad Honnef Physics School*, Germany, Online
- 21–25 Jun 2021 **32nd National Nuclear Physics Summer School**, *Indiana University and Universidad Nacional Autónoma de México*, Online
- 14–18 Jun 2021 **Preparatory school for Strings 2021**, *International Institute of Physics*, Natal, Online
- 31 May–4 Jun 2021 **Higgs Centre School of Theoretical Physics**, *The University of Edinburgh*, Online
- 21–30 May 2021 **IUCSS Summer School and Workshop on the Lorentz and CPT violating Standard Model Extension**, *Indiana University*, Bloomington, Online
- 08–19 Feb 2021 **SFT 2021: Lectures on Statistical Field Theories**, *Galileo Galilei Institute for Theoretical Physics*, Florence, Italy, Online
- 7–19 Sep 2020 **Thematic Program on Mathematical Hydrodynamics**, *The Fields Institute for Research in Mathematical Sciences*, University of Toronto, Online
- 10–14 Aug 2020 **School on Ultra Quantum Matter**, *Perimeter Institute for Theoretical Physics*, Online
- 18–22 Jun 2018 **QCD meets Precision**, *Laboratoire de Physique Theorique d’Orsay*, Paris, France
- 01–11 Mar 2017 **CNT lectures on Special Topics in Nuclear Astrophysics**, *Variable Energy Cyclotron Centre*, Kolkata, India
- 21 Nov–10 Dec 2016 **Fundamental Problems of Quantum Physics**, *International Center for Theoretical Sciences*, India
- 05–10 Nov 2016 **Group Theory and Computational Methods**, *International Center for Theoretical Sciences*, India
- 21–29 Dec 2014 **Winter School on AstroParticle Physics**, *Cosmic Ray Laboratory of TIFR in association with the Bose Institute (Kolkata)*, Ooty, India
- 02–30 Jul 2012 **Industrial Training on VLSI and Related Softwares**, *Central Tool Room and Training centre at Ministry of Micro, Small and Medium Enterprises*, Kolkata, India

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## Computer Skills

Languages	C, C++, Fortran, L <sup>A</sup> T <sub>E</sub> X
Platforms	Linux, Windows, Mac
Tools	Mathematica, Gnuplot, MadGraph, Matlab, VHDL, Verilog

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## Extra-curricular

- 3 Jun–23 Sep 2021 **Co-organizer for the online lecture series “Introduction to Relativistic Heavy-Ion Collisions”**, *organized by Institute for Research in Fundamental Sciences*, Iran
- 28 Jun 2021 **Quark-Gluon-Plasma and its mysteries**, *IFJ PAN seminar for young scientists*, Online
- 02 Aug 2020 **The realm of relativistic hydrodynamics**, *Popular science talk at the informal conference “Summer Students, Rebel!”*, Online
- 09 Apr 2020 **Quantum Mechanics in Electronics**, *Invited talk at the Dept. of Electronics and Communication Engineering, GNIT*, Kolkata, India, Online
- Apr–Dec 2019 **Student Member**, *European Physical Society*
- Jan 2019–now **Associate Member**, *EuroScience*
- Feb 2018 **The theory which predicted Gravitational Waves**, *Scienceteen Magazine*, Nainital, India
- 2015–2016 **Volunteering in national science programs**, *GMRT, NCRA, IUCAA and Pune University*, Pune, India
- 2011–2012 **Student Member**, *Indian Statistical Institute, Kolkata and Indian Mathematical Society, Aurangabad*, India