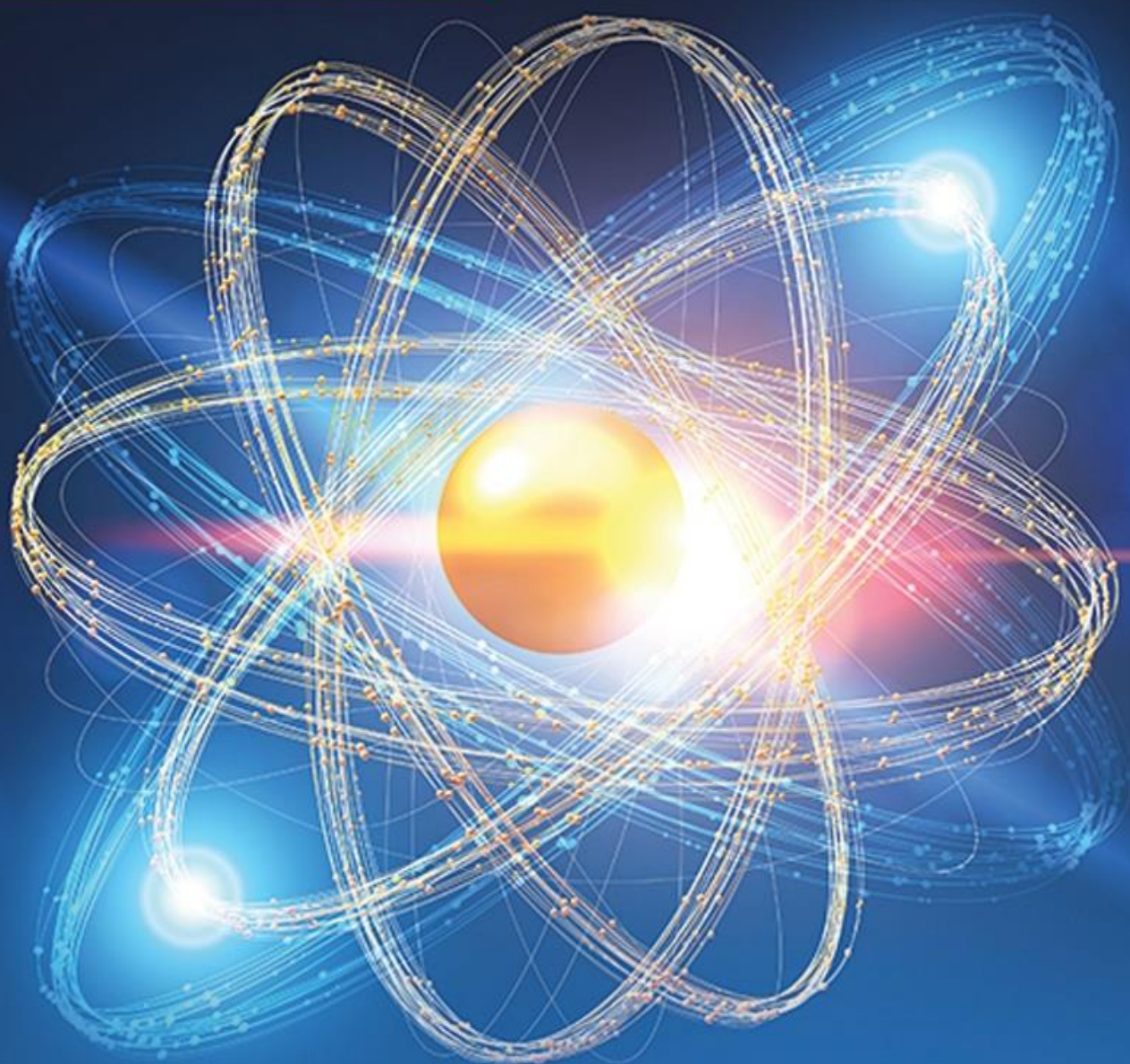


# Nepal Physical Society **Newsletter**

Volume: 37, Issue: 2, February 2021



Nepal Physical Society  
Tri-Chandra Campus  
Kathmandu, Nepal, Email: [npseditor@gmail.com](mailto:npseditor@gmail.com)



# नेपाल भौतिक विज्ञान समाज

## Nepal Physical Society

Tri-Chandra Multiple Campus, Ghantaghar, Kathmandu, Nepal.

### Editorial

*It is our great pleasure to release the 37<sup>th</sup> issue (2) of NPS newsletter. This newsletter summarizes the NPS Scientific activities such as NPS News, Seminars, Talks/Scientific Visits, Physics Related News, Meeting, Conferences, and many other informational matters.*

*NPS 36<sup>th</sup> annual general meeting (AGM) was held on November 8-9, 2019 at the Central Department of Physics, TU, Kirtipur. The AGM elected new executive committee and since then the executive committee has been actively involving on NPS activities. However, due to ongoing COVID-19 pandemic around the world, we are not able to perform NPS activities physically. So, we have been performing the several activities from virtual online meetings for the last five months (since February 2020).*

*NPS organized 14<sup>th</sup> Nepal Physics Olympiad (NePhO) in February in which more than 350 students were participated in preselecting exam. The most of the NPS effort has been devoted for the selection procedure for first round for IPhO participants. We would like to thank all professors/faculties and NPS members for encouraging students to participate NePhO. We highly appreciate the contribution of professors and faculties for their constant involvement and guidance for the selection procedure of first round of IPhO.*

*On behalf of the NPS executive committee, I would like to thank all the NPS members for their valuable support in the publication of this issue. The NPS executive committee welcomes the constructive feedback for the improvement of the publication incoming issues. Finally, we very much appreciated your comments queries, suggestions, and correspondences.*

*Thank you.*  
**Dr. Binod Adhikari**  
Editor in Chief  
Nepal Physical Society

### Message from the President

*Dear Esteemed NPS Members,*

*Welcome you all on the 37<sup>th</sup> Annual Convention of Nepal Physical Society. I hope that everyone is well and staying safe during these uncertain times due to global epidemic of COVID-19 pandemic. At present, due to unfavorable situation, we are executing NPS activities virtually using digital technology. We have formed executive committee of NPS chapters in all seven provinces through the virtual meetings. In addition, the NPS division has been formed based on the field of interest of research area to promote the collaborative research in the physics community.*

*NPS regularly organizes colloquiums, workshops, seminars and trainings to improve the teaching and research capabilities of our students and faculties. Recently, we have completed, a long-term (seven months) School of Advance Computing to grow and develop the computational and research capabilities of our faculties, who have been involving on teaching to undergraduate and graduate level courses in Physics.*

*Moreover, we have formed editorial board and have begun to publish bi-annual Journal of Nepal Physical Society (JNPS). I would like to thank editorial board members for their great efforts. We are highly dedicated to strengthen the quality of the journal. For this purpose, we have upgraded NPS website so that all publication procedure such as articles submission, reviewing and correspondences can be accomplished from the online. Similarly, one can take the NPS membership through the online.*

*Eventually, I would like to appeal for greater efforts in promoting collaborative excellence in physics research and education from national and international organizations. I urge all team members of NPS chapters and NPS divisions to play the dynamic roles and work together on scientific and public outreach activities in the local community. I am optimistic that the NPS activities will adornment further with supports from all valued members. On behalf of NPS executive committee, I thank you all who have constantly supported NPS activities, and I look forward to your productive feedback and suggestion.*

*With best regards,*  
**Prof. Dr. Narayan P. Chapagain**  
President  
Nepal Physical Society

NPS executive committee has formed the NPS division based on research field of interest to promote the collaborative research work in the physics community.

## Division of Astrophysics (DAP)

**Chair:** Prof. Dr. Binil Aryal, CDP

**Members:**

- Prof. Dr. Saroj Nepal, MMC
- Dr. Ajay Kumar Jha, CDP
- Dr. Shiv Narayan Yadav, PMC
- Dr. Arjun K Gautam, BMC

## Division of Atmospheric and Space Physics (DASP)

**Chair:** Prof. Dr. Narayan P. Chapagain

**Members:**

- Prof. Dr. Khem Narayan Poudyal
- Prof. Dr. Binod Kumar Bhattarai
- Prof. Dr. Ram Prasad Regmi
- Dr. Bed Raj KC
- Dr. Shreeram Sharma
- Dr. Binod Adhikari

## Division of Bio-Medical Physics (DBMP)

**Chair:** Dr. Hari Prasad Lamichhane

**Members:**

- Dr. Kanchan Prasad Adhikari
- Dr. Tika Ram Lamichhane
- Dr. Sagar Regmi

## Division of Plasma Physics (DPP)

**Chair:** Prof. Dr. Raju Khanal

**Members:**

- Prof. Dr. Deepak Prasad Subedi
- Dr. Lekhanath Mishra
- Dr. Ujwal Man Joshi
- Dr. Raju Bhai Tyata
- Dr. Rajendra Shrestha
- Dr. Ganashyam Thakur

## Division of Condensed Matter Physics (DCMP)

**Chair:** Prof Dr. Narayan Prasad Adhikari

**Members:**

- Prof. Dr. Devendra Raj Adhikari
- Dr. Gopi Chandra Kafle
- Dr. Bhawani Dutta Joshi
- Dr. Khemanand Neupane
- Dr. Shashit Kumar Yadav
- Dr. Nurapati Pantha
- Dr. Kapil Adhikari
- Dr. Saran Lamichhane

## Division of Geophysics (DGP)

**Chair:** Prof. Dr. Harihar Paudyal

**Members:**

- Prof. Dr. Anant Panthi

## Division of Material Science (DMS)

**Chair:** Prof. Dr. Leela Pradhan Joshi

**Members:**

- Prof. Dr. Shankar Prasad Shrestha
- Prof. Dr. Tika Bahadur Katuwal
- Prof. Dr. Sitaram Bahadur Thapa
- Prof Dr. Rajendra Parajuli
- Prof Dr. Ohm Prakash Niraula
- Prof. Dr. Purna Bahadur Chanda

## Division of School of Computing (DSC)

**Chair:** Dr. Dibakar Sigdel

**Members:**

- Mr. Prakash Man Shrestha
- Dr. Sanju Shrestha
- Mrs. Usha Joshi
- Dr. Amba Datt Pant
- Mr. Karan Giri
- Mr. Devendra Raj Upadhyay
- Mr. Madhu Sudan Paudel
- Mr. Yogesh Maharjan

## JNPS-Editorial Board Members

- Dr. Binod Adhikari
- Dr. Bhawani Joshi
- Dr. Manoj Kumar Yadav
- Dr. Krishna Rai
- Dr. Rajendra Prasad Adhikari

# Program Highlights of 37<sup>th</sup> NPS Annual Convention

## Thematic Talk:

- ❖ **Higher Education in Science and Technology: Challenges and Perspectives**
  - Speaker: Prof. Dr. Binil Aryal, Dean, IoST, TU
  - Commenters: Prof. Dr. Sitaram Byahut (Retired Professor from TU)  
Prof. Dr. Deepak Prasad Subedi, Kathmandu University
  - Rapporteurs: Dr. Binod Adhikari and Dr. Krishna B. Rai
- ❖ **Closing Ceremony of NPS School of Advance Computing** (Certificate Distributions to the Participants)
- ❖ **Kedar Nath Khanal Memorial Award Distribution**
- ❖ **NePhO Champaign Certificate Distribution**
- ❖ **Release Program:** Journal of Nepal Physical Society Vol.6 No.2 and NPS Newsletter Volume 37, Issue 2
- ❖ **Closed Session of General Convention**

## Scientific Session

Scientific Committee

Prof. Dr. Leela Pradhan Joshi - Chair

Prof. Dr. Sitaram Bahadur Thapa

Prof. Dr. Devendra Raj Adhikari

Prof. Dr. Anant Panthi

Dr. Bhawani datt Joshi

Mr. Min Raj Lamsal

Mr. Hareram Mishra

Mr. Tarani Prasad Yadav

Mr. Devendra Raj Upadhyay

Mr. Yogesh Maharjan

### Chair and Co-Chair of Scientific Session

(There are 27 oral presentations in three parallel sessions)

- Prof. Dr. Mukunda Mani Arayl
- Prof. Dr. Sitaram Byahut
- Prof. Dr. Bhadra Pokharel
- Prof. Dr. Tika B. Katuwal
- Prof. Dr. Narayan P. Adhikari
- Prof. Dr. Khem N. Poudyal
- Dr. Ajay Kumar Jha

### Judges for the Oral Presentations

- Prof. Dr. Raju Khanal
- Prof. Dr. Anant Panthi
- Prof. Dr. Rajendra P. Parajuli
- Prof. Dr. Devendra Adhikari
- Dr. Shiv Narayan Yadav
- Dr. Bhawani Joshi
- Dr. Binod Adhikari

# NPS School of Computing

Nepal Physical Society (NPS) has conducted “NPS School of Computing” via online platform from July 4, 2020 to January 31, 2021 for the period of seven months. The target group of this program is the faculties of Physics working at different universities, constituent, community, and private colleges from Nepal. This long – term computing school has been designed as the classes scheduled at weekends (2 hours on every Saturday and Sunday). The main objective of this school is to develop the capabilities of computational skills (e.g., Numerical Methods, Simulation, and Animation, etc.) of the Physics faculty, which are fundamental techniques in research and teaching Physics courses to Undergraduate and Graduate levels. The school includes from basic training on python programming to solve introductory computational problems in the Physics courses (e.g., differential equations in Mechanics and partial differential equations in Electrodynamics, Monte Carlo simulation in Statistical Physics and Condensed Matter Physics) using Python programming and Quantum Physics with QuTip, and Quantum Computing with Qiskit, and several data-visualization techniques. There are more than 100 participants actively participated during this school.



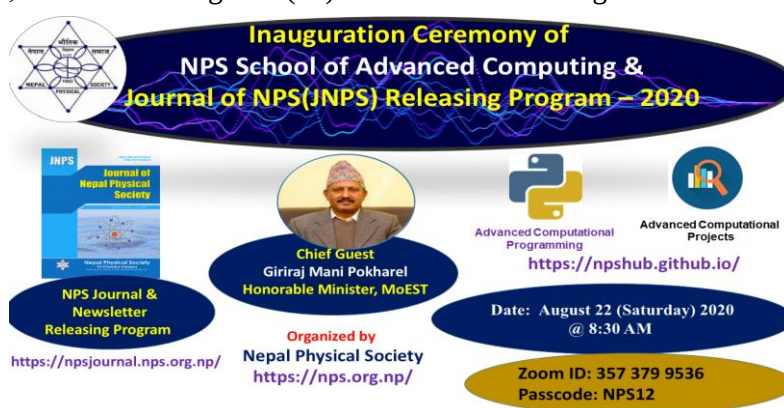
NPS has formed Division School of Computing (DSC) to conduct the computational activities more effectively. The DSC emphasizes to develop the practical skills in computation and problem solving across all areas of physics computing that brings from Physics Textbook to Scientific Computing in the Cloud. For further information: School website:

## Major goals of NPS DSC are:

- Conducting long term and short-term School of Computing in diverse computing topics from Physics and beyond to deliver classroom-oriented project design for undergraduate and graduate level Physics syllabus (e.g., Numerical Methods, Classical Mechanics, Statistical Physics, Quantum Physics, Electrodynamics and Condensed Matter Physics etc).
- Conducting occasional coding hackathon together with collaboration of other educational institutions and interested parties in innovative topics (e.g., Quantum Computing, Machine Learning, AI).
- To encourage independent researchers to design computational model on experimental data and big-data scenario (e.g., transport, healthcare, social media, environment) through advanced computing project design, computing architecture and methodologies.
- To encourage graduate and undergraduate students to participate in the intern projects and research projects in scientific computing in collaboration with other organization (e.g., ANPA, NAST). To encourage and help responsible body in the development and implementation of computation-oriented course chapters in high school level (grade 9-12) syllabus.

# Inauguration Ceremony of the NPS School of Computing

The NPS had organized an Inauguration Ceremony for the NPS School of Advanced Computing on August 22, 2020 that included release of the 6<sup>th</sup> volume of Journal of Nepal Physical Society (JNPS). The program was organized through a virtual zoom meeting with more than 300 participants. The program was chaired by the President of NPS, Prof. Dr. Narayan P. Chapagain and conducted by the Secretary of NPS, Dr. Gopi Chandra Kafle. The chief guest at the inauguration ceremony was Honorable Minister, Mr. Giriraj Mani Pokharel, Ministry of Education, Science and Technology, Government of Nepal. The special guests were Vice Chancellor of Nepal Academy of Science and Technology (NAST), Dr. Sunil Babu Shrestha, Prof. Dr. Shivrul Bhusal, Rector, TU; Prof. Dr. Kedar Lal Shrestha, Former VC, NAST; and Deans of Universities; NPS Past Presidents, President of different professional societies and senior professors and faculties. The program began with welcome speech by the Vice President of NPS, Prof. Dr. Leela Pradhan Joshi. The NPS president, Prof. Dr. Narayan P. Chapagain presented an overview of NPS activities and highlighted the ongoing activities, 'NPS School of computing' and publication of the NPS Journal. The School includes training in Python programming and solving introductory computational problems in Physics courses (e.g. differential equations in Mechanics and partial differential equations in Electrodynamics, Monte Carlo simulation in Statistical Physics and Condensed Matter Physics) using Python programming, Quantum Physics with QuTip, Quantum Computing with QisKit, several data-visualization techniques, Artificial Intelligence (AI) and Machine Learning.



**Inauguration Ceremony of  
NPS School of Advanced Computing &  
Journal of NPS(JNPS) Releasing Program – 2020**

**Chief Guest**  
Giriraj Mani Pokharel  
Honorable Minister, MoEST

**Organized by**  
Nepal Physical Society  
<https://nps.org.np/>

**Date:** August 22 (Saturday) 2020  
**@ 8:30 AM**

**Zoom ID:** 357 379 9536  
**Passcode:** NPS12

**NPS Journal & Newsletter Releasing Program**  
<https://npsjournal.nps.org.np/>

**Advanced Computational Programming**  
<https://npshub.github.io/>

**Advanced Computational Projects**

The lead role as an instructor at the school was Dr. Dibakar Sigdel, Data Scientist, UCLA, USA. Dr. Sigdel also highlighted the importance of the computing school. The Honorable Minister addressed the program with a commitment to incorporate the issues raised by the NPS president to strengthen research activities in the universities and association of professional societies for formulating the Science, Technology and Information (STI) policy. Similarly, the Vice Chancellor of NAST, Dr. Sunil Babu Shrestha also highlighted the ongoing research activities and his desire to work in collaboration with Nepal Physical Society.

Snapshots of the inauguration program



## Talks Program

- **Prof. Dr. Uday Raj Khanal**, TU, delivered a talk on "**Black Hole**" 21 April 2019 at Nepal Physical Society.
- **Dr. Pradip Basnet**, School of Materials Science and Engineering at Georgia Institute of Technology, Georgia USA, delivered a talk on "**Filamentary Adaptive Oxides-based Memristor Devices for Brain-inspired Computing Applications – Focus on Physics of Materials and Devices**", 17th July 2020 at Nepal Physical society.
- **Dr. Durga Paudyal**, an associate scientist at Ames Laboratory and an adjunct associate professor at Iowa State University, USA, delivered a talk on "**Magnetic functionalities to quantum phenomena with rare earth materials**", 3rd July 2020 at Nepal Physical society.
- **Dr. Bhoj Raj Gautam**, Assistant Professor, Fayetteville State University, USA, delivered a talk on "**Manipulation of Optoelectronic properties of Polymer and Perovskite Nanostructures**", 17th June 2020 at Nepal Physical Society.
- **Prof. Michale, Steinitz**, Emeritus Professor of Physics, St. Francis Xavier University, Nova Scotia, Canada, and Editor in chief of Canadian Journal of Physics delivered a talk on "**beyond the box**", 12<sup>th</sup> June 2020 at Nepal Physical Society.
- **Dr. Sarita Paudel**, Virologist, University of Pittsburgh, USA delivered a talk on "**COVID-19: Ongoing Pandemic**", 18<sup>th</sup> May 2020 at Nepal Physical Society.
- Nepal Physical Society organized one day Workshop on **Python Programming** on April 18<sup>th</sup>, 2020.
- **Dr. Rudra Aryal**, Assistant Professor of Franklin Pierce University, USA delivered a talk on "**Measurement technique and Aerosol Optical Properties**" at following venue and time, 2nd, Magh, 2076 at Nepal Physical Society.
- **Dr. Hemwati Nandan**, Professor and Coordinator, IUCAA Centre for Astronomy Research Development (ICARD), India and Dr. Ravinder Kumar, Assistant Professor of Gurukula Kangri Vishwavidyalaya, Haridwar (Uttarakhand), India delivered talks on **Particle physics and nanomaterials**, 7<sup>th</sup> Jnuaray 2020 at Patan Multiple Campus, Patandhoka Lalitpur, TU.
- **Dr. Binod Adhikari** delivered a talk on online School of Space and Atmospheric Physics, August 5-7, 2020 at St. Xavier's College, Maitighar, Kathmandu, Nepal.

## Conference and Workshop

- **Prof. Dr. Narayan P. Adhikari** and **Mr. Shyam P. Khanal** visited IIT Kanpur India during 13th Jan -24 Jan 2020.
- **Dr. Deepak Subedi** Participated and co-chaired a session in AAPPS-DPP 2020 e-conference during Oct. 26-30, 2020 in Jeju, Korea. **Dr. Subedi** Presented an invited talk in the International Webinar on Emerging Interfaces of Physics & Technology (EIPT-2020) held during Sept 7-8, 2020. **Dr. Subedi** also Presented an invited talk and chaired a session in 13<sup>th</sup> ICPSA 2020(International Conference on Plasma Science and Applications) Series of Conferences of AAAPT jointly organized by Ravenshaw University, Cuttack and AAAPT (Asian African Association for Plasma Training) during 26th-28th Dec 2020.
- **Mr. Daya Nidhi Chhatkuli** participated and presented in the 1<sup>st</sup> International e-Conference on Recent Advances in Physics & Materials Science-2020 (IC-RAPMS-2020) on July 9 - 10, 2020 in West Bengal, India **Mr. Chhatkuli** also participated online one week Faculty Development Program (22-28, July 2020) and Interaction Session on Astronomy & Astrophysics (30<sup>th</sup> sept. 2020) in India.

## Congratulations

- NPS would like to express a wholeheartedly congratulation and extend best wishes to Prof. Dr. Binil Aryal as a Dean of IOST and Prof. Dr. Om Prasad Niraula as a HOD of Central Department of Physics, TU.
- NPS would like to express congratulation to Dr. Sanju Shrestha as a Fulbright Nepali post-doctoral grantee at New Jersey Institute of Technology, Newark, New Jersey, USA, 2020.
- NPS would like to express a wholeheartedly congratulation to Dr. Diwakar Sigdel of UCLA, USA (Life member of NPS and Co-ordinator of NPS School of Computing) for being an IBM Quantum Computing (QisKit) Advocate. We NPS family are proud of you. We wish you your outstanding future endeavors.
- NPS would like to express a wholeheartedly congratulation and extend best wishes to Mr. Khimananda Neupane and Mr. Ramhit Yadav, Asst. Prof. of TU as a campus chief of Butwal Multiple Campus and S.S. M Yadav Multiple Campus, Siraha, Nepal.

## School on Quantum Transport and Thermodynamics at Nanoscale

Central Department of Physics Tribhuvan University Kathmandu (CDPTU) and The Abdus Salam International Center for Theoretical Physics Trieste Italy (ICTP) organized an International “**School on Quantum Transport and Thermodynamics at Nanoscale**” during September 29 to October 15. The school focused on the latest development in the mentioned topics. It covered two main topics – quantum transport and Thermodynamics at nanoscale. The school was inaugurated by Prof. Dr. Dharma Kanta Baskota Vice Chancellor of Tribhuvan University. In his inaugural speech he highlighted importance of such international schools to strengthen science education in TU. Similarly, Rector of TU Prof. Dr. Shiva Lal Bhusal and Prof. Dr. Ram Prasad Khatiwada, Dean Institute of Science and Technology TU, in their inaugural speech focused on the role of ICTP to organize such schools in developing countries like Nepal. Prof. Rosario Fazio talked about the role of science to develop a country and how ICTP is helping to develop fundamental science in developing countries. Prof. Dr. Binil Aryal, Head, Central Department of Physics focused his speech on development of computational physics at TU. Prof. Narayan Prasad Adhikari, one of the coordinators of the school, highlighted the topics of the school to be covered for 17 days. The speakers were from India, Israel and Italy. The speakers were Prof. Rosario Fazio (Head, Condensed Matter Physics ICTP), Prof. Yuval Gefen Weizmann Institute of Science, Israel, Prof. Fabio Taddei Pisa, Italy, Prof. Bijaya Agarwalla IISER Pune India and Prof. Sai Vinjanampathy IIT Bombay. The school was organized online. There were 15 lectures each for 90 minutes. There were 60 participants from Thailand, China, Nepal, India, Iran, Israel, Italy, Germany, USA and Argentina. The coordinators of the school were Prof. Narayan Prasad Adhikari (CDPTU) and Dr. Bibek Bhandari from Scuola Normale Superiore Italy.

## Activities of NPS Province-1

### Workshop

- NPS Province-1 organized a workshop on Research Writing and Publishing on July 8-9, 2020.
- NPS Province-1 organized a workshop on MATLAB Computations and Simulations on August 1-2, 2020.

## Activities of NPS Bagmati Chapter

### Talk Program

- **Dr. Rajendra Prasad Adhikari**, Kathmandu University delivered an online webinar on use of Supercomputer for Physicists on 2020/07/18 at NPS Bagmati Chapter.
- **Dr. Madan Sigdel**, CDMH, TU delivered a Physical Aspects of Climate Change on 2020/08/08 at NPS Bagmati Chapter.
- **Dr. Dilli Ram Thapa**, Birendra Multiple Campus, TU delivered a talk program on Damaging Earthquakes and Seismic Hazard Assessment of Nepal, 2020/08/29 at NPS Bagmati Chapter.
- **Dr. Jagan Devkota and Dr. Sri Krishna Bhattarai**, Association of Nepalese Physicists in America (ANPA), USA, delivered a talk about Collaborative Research on 2020/08/29 at NPS Bagmati Chapter.
- **Dr Sabin Adhikari**, Columbia University, USA delivered an online Talk on Statistical Physics of semi-crystalline Polymers, 2020/10/3 at NPS Bagmati Chapter.

## Activities of NPS Lumbini Chapter

### Talk Program

- Dr. Mukti Aryal, USA, delivered an online talk on “**Mimicry of Colorful Nature**”, 10<sup>th</sup> July 2020 at NPS Chapter-5. This program was supported by Condensed Matter Physics Research Center.
- Mr. Jhulan Poudel, Butwal at Multiple Campus, Tribhuvan University delivered an online talk on “**Scientific Writing Using Latex**” 12<sup>th</sup> September 2020 at NPS Chapter-5.

## Activities of NPS Gandaki Chapter

- **Dr. Sudip Khadka**, Virologist of Georgia State University, Atlanta USA, delivered a talk on "**SARS-2 CORONAVIRUS**", 16 May 2020 at NPS Ganadaki Province.
- **Dr. Shree Ram Acharya**, Old Ridge National Laboratory USA delivered a talk on "**Material Computation: Theory and Analysis**", - 1 Aug 2020 at NPS Ganadaki Province.
- **Dr. Chandra Mani Adhikari**, (General Secretary, ANPA) North Carolina Central University, delivered a talk on "**Optical Properties of Carbon Nanotube and its Periodic Array**", 9 Aug 2020 at NPS Ganadaki Province.
- **Dr. Nava Raj Subedi**, University of IDaho, USA, delivered a talk on "**An Overview of Imaging Modalities: Digital Holography to Lattice Light-Sight Microscopy**", 23 Aug 2020 at NPS Ganadaki Province.
- **NPS Ganadaki Province** organized "**A Virtual Interactive Program**" on the occasion of **National Science Day**" on 17 Sep 2020.
- **Mr. Abiskar Bhushal** delivered a talk on "**Nobel Prize of Physics 2020**" on 21 Nov 2020 at NPS Ganadaki Province.
- **NPS Ganadaki Province** organized a "**Felicitation Program to Assoc. Prof. Benimadhav Dhungana**", a newly appointed HOD of Department at Physics Prithvi Narayan Campus, on Dec 25, 2020

## Activities of NPS Far-Western Chapter

### Workshop

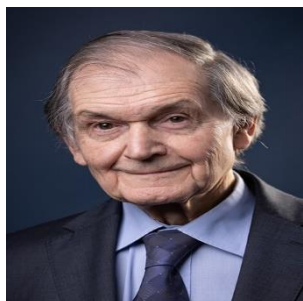
- **Dr Bhawani Datt Joshi**, Siddhanath Science Campus, Mahendranagar, TU delivered a talk "**Literature Search and Formatting**" on Regional Workshop organized by NPS Chapter-7, 2020-07-27.
- **Mr Prem Raj Joshi**, Kailali Multiple Campus, Dhangadi, TU delivered a talk "**Data collection and Analysis**" on Regional Workshop organized by NPS Chapter-7, 2020-07-27.
- **Dr Gopi Chandra Kafle**, Central Department of Physics, Kirtipur, TU delivered a talk "**Language, Citation and References**" on Regional Workshop organized by NPS Chapter-7, 2020-07-28.
- **Dr Mahadev Bista** Siddhanath Science Campus, Mahendranagar, TU delivered a talk "**Problem Selection and Writing**" on Regional Workshop organized by NPS Chapter-7, 2020-07-28.

### Talk Program

- **Dr Chandra P. Joshi**, Cornell University, delivered a talk on "**Opportunities for abroad study and research standard in USA**", 2020-05-01 at NPS Province-7.
- **Dr Abhishek K. Mishra**, University of Petroleum and Energy Studies, Dehradun, India delivered a talk on "**Computational Material Science using Density Functional Theory**", 2020-06-27 at NPS Province-7.
- **Dr. Bhim Prasad Chamlagain**, University of Central Florida, Orlando, FL, USA delivered a talk on "**Device Engineering in 2D TMDs Electronics**", 2020-07-19 at NPS Province-7.

# The Nobel Prize in Physics 2020

The Nobel Prize in Physics 2020 was divided, one half awarded to Roger Penrose "for the discovery that black hole formation is a robust prediction of the general theory of relativity", the other half jointly to Reinhard Genzel and Andrea Ghez "for the discovery of a supermassive compact object at the Centre of our galaxy."



Roger Penrose



Reinhard Genzel



Andres Ghez

## Condolences



Nepal Physical Society (NPS) is recently suffered from a tragedy: the loss of life of the late Prof. Dr. Kedar Lal Shrestha, Life Member and Former President of NPS, one of the ideal scientists and a motivator. Late Prof. Shrestha passed away at the age of 82 years on 25 November 2020. May God give all of us (Family members, all the member of NPS and well-wishers) the full strength to bear this irremediable loss. May God provide his soul with eternal rest.

- We, NPS family express our deepest condolences on sudden and unexpected demise of Dr. Ramesh Raj Subedi (Life member of NPS, Living at Irving, Texas, USA) on 9 Aug 2020. May gods provide the strength for whole family and friends to bear such sorrow. We pray departed soul Rest in Peace (RIP).
- Mr. Swapan Kumar Chakraborty (Lecturer of Physics, MMM, Multiple Campus Biratnagar) is no more with us. NPS family give our deepest condolence to the entire family.
- We, NPS family express our deepest condolences on sudden and unexpected demise of Mr. Puskar Basnet. May gods provide the strength for whole family and friends to bear such sorrow. We pray departed soul Rest in Peace (RIP).



We, Family of Nepal Physical Society, are deeply distressed by hearing the regretful news about the sudden death of Philip Warren Anderson, on March 29, 2020 at the age of 96. Anderson is the top condensed-matter physicists of the 20th century and he was awarded Nobel Prize for Physics in 1977 on theoretical research into the electronic structure of magnetic and disordered systems led to an improved understanding of metals and insulators. Anderson also visited Kathmandu on 1989 during First Kathmandu Summer School in Physics-BCSPIN. May his eternal soul live in peace and we extend our deeply felt condolences to the Anderson's family, disciples, colleagues, and followers.

# Ethics and Morals in Science: Do we really need them?

Prof. Dr. Narayan Prasad Adhikari

## Abstract

*We discuss the significance of ethics and morals in science. The issue of morals and ethics in science which were not discussed till some decades ago are demanding discussion now more than ever. It may be due to higher number of people involved in the area or may be due to pressure felt by academic and industrial scientists, at the present time, we must develop mechanisms to check plagiarism and other research misconducts. Whatever the reason we need to have/develop robust mechanism to check the outcomes of the scientific research. There is something more than the mechanism, that is the ethics/morals of the scientists themselves, which is governing the development of science.*

The purpose of studying Science is to find “The Whole Truth”. I mean not only truth but the whole truth. For the development of society, scientific community, and human beings - the promotion of science is necessary. This means we need to understand “The Whole Truth” of the nature or phenomena happening in the universe. For this, nowadays, the significance of two terms is becoming more and more important. The terms are “Morals” and “Ethics”. There may not be any difference in those two terms “Morals” and “Ethics” in business, however, there is difference between these two terms in science. According to diffen.com there is difference between these two terms [1]. Ethics is “The rules of conduct recognized in respect to doing science whereas Morals is “Principles or habits with respect to right or wrong conduct” [1]. While morals also prescribe dos and don'ts, morality is ultimately a personal compass of right and wrong”. Both terms relate to “right” and “wrong” conduct. Ethics means rules provided by external source, for example, the code of conduct to be followed by Scientists - in the context of this article. Morals means an individual's own principles regarding right and wrong. For the development of society, scientific community, and human beings the promotion of science is necessary. At the same time, I strongly believe that the growth of moral and ethical values is also equally important. I mean science should not be “value free” as some people (especially in modern days) think.

The question arises why we need to talk more about Ethics and Morals now. Scientists were not talking about these terms few decades ago (say 5 decades ago). In other words, why people (scientists) are more sensitive towards Ethical and moral values of scientists in the present days than many decades earlier. Now many people are very much sensitive towards ethical values means there could be many people who would like to see the moral/ethical values have been obeyed by their peers. According to John Ziman, the world of Science has been divided into two types of institutions namely, “Academic Science” and “Industrial Science” [2].

Scientists in academic institutions or universities which are publicly practise “Academic Science”. The practice in these institutions is intensely INDIVIDUALISTIC and people held personal appointments earned by published contributions to knowledge. Moreover, students work here as resource person of the Research work conducted in different groups to earn degrees. Such personal contributions are driven by their curiosities rather than other vested interests. Moreover, universities have little direct influence in the interest of the professors in the types of problems as well as methods on the research work/topics. The university people carry on research to satisfy their own curiosity. Therefore, the academic scientists belonged to a worldwide institutional web. In such institutions the production of reliable public knowledge is so loosely organized that it almost seemed like the anarchist's dream: an active, orderly republic of free born citizens with no central government [2]. The backbone of its guidance is peer review, respect for priority of discovery, comprehensive citation of the literature and so on. Even though these practices are not implemented formally or systematically enforced by any organization they geared smoothly together. These practices basically define “ethos” for science. Nowadays, the interesting question is “do all the people follow these practices”? It is still on the individual person to follow or not to follow. In academic science it is the author's moral and ethical values which drives the development of knowledge.

In industrial science, the base of knowledge is the same as that of academic science. However, its structural principles are different as they are explicitly enforced by the corporate bodies, private and public, that pay scientists to work for them. This does not mean that these practices are completely antithetical to the academic ethos still there are a lot of differences. The main difference is that the scientists working in industry do not get opportunity to choose their own problem, to publish their research findings etc. Industrial science is also a parallel culture in which talented persons use good science to produce valuable knowledge as there are many such examples in modern science. Main point is that Industrial Science mostly involves in the business of daily life and hence they focus on applications of science. This is the reason why the industrial scientists need to take care of personal values and needs of customers, patients, and other users. The industrial scientists should not take money from firms or government agencies whose policies and practices are ethically unacceptable. The same applies to academic scientists also. They could warn the scientific community if they are asked to carry on any unethical work. Of course, all such matters totally depend up on the morals of individual working as an Industrial scientist.

The division of science into two different traditions – academics and industrials is in different types of institutions. In any case science as whole has been insulated from morals and ethics for many reasons. Academic scientists can be indifferent to the potential consequences of their work whereas industrial scientists do work whose consequences are considered too serious to be left in their hands [2]. However nowadays both these cultures have merged into one. The traditional mode of research, academic science, is not just a 'method': it is a distinctive culture, whose members win esteem and employment by making public their findings.

As time passes so happens with the development of science. It can be seen from increase in the number of scientific papers published every year. It is a natural process, so it happens. However, the matter of fact is that a vast majority of the scientific papers cannot be reproduced by other scientists independently. What we learned – Science is reproduction. Now this statement is not true in majority of published scientific papers. Basically, we regard any published paper as our resource to improve our understandings of the fact which we did not know before. Science moves forward by corroboration when researchers verify other people's results. This is the only way to learn any new technique/method. A new researcher gets encouraged by being able to reproduce others results. Baker [3] in 2016 carried out a study regarding reproducibility of scientific papers already published. In a survey of 1,576 scientists' majority of them (52%) answered that there is a significant crisis to reproduce data (research) of other scientists. In the same survey it is mentioned that more than 70% of researchers have tried and failed to reproduce another scientist's experiments and more than half have failed to reproduce their own experiments. In the same survey ~31 % think that failure to reproduce published results means that the result is probably wrong. However, most of the surveyed scientists still trust the published literature. The same paper reports that 13% of the researchers have published failed replication of the previously reported results. The survey further asked scientists what led to problems in reproducibility. In that survey more than 60% of the respondents replied each of two factors – pressure to publish and selective reporting – always or often contributed. This means - is the pressure to scientists to produce many papers for their job, promotion, funding etc. is contributing to irreproducibility of the results? Or is it because the institutions which provide job to scientists just run after the numbers? I mean there are so many numbers - number of published papers, citation, h-index, i-10 index and so on. I think that is always there still all the scientists across the globe must follow morals/ethics. The development of science rests only on the scientist's morals and ethics not only the number of publications, citations, i-10 index, or h-index.

The national science foundation defines Research misconduct as “fabrication, falsification, or plagiarism in proposing or performing research” [4]. In scientific inquiry and academic *research*, *fabrication* is the intentional misrepresentation of *research* results by making up data, such as that reported in a journal article whereas *falsification* is “manipulating research materials, equipment, or processes, or changing or omitting data or results such that the research is not accurately represented in the research record”. *Plagiarism* is presenting someone else's work or ideas as your own, with or without their consent, by incorporating it into your work without full acknowledgement. So, any of these three is research misconduct. In recent days also there are many examples of research misconduct [5]. Many institutions check for the plagiarism one of the parts of research misconduct. However very few judges or check for the first two i.e., “fabrication and falsification”. The checking of these two basically rests on the morals/ethics of the scientists themselves. If we lose these two and check only third one, is it OK? Is there any mechanism like some software that checks “plagiarism” to check other two? Only scientific judgments and morals/ethics are there for other two. Again morals/ethics play crucial role in the development of science and it is not just the numbers.

At the present time many scientists believe that morals and ethics are the only driving factors of development of science across the globe. No one can deny this fact. Still why do we need to make mechanism to check plagiarism and other research misconduct. Those mechanisms which were considered taboo just few decades ago now they are inevitable in the development of science. At present, they are need of time. Further scientists need to have higher level of ethics/morals than businessmen. There are so many research conducts which are left just to the hands of scientists not to the referees/publishers.

#### References:

1. J. M. Ziman “*An Introduction to Science Studies: The Philosophical and Social Aspects of Science and Technology*”, Cambridge University Press, Cambridge 1987
2. M. Backer, **Nature** 533, 452–454 (2016)
3. [https://en.wikipedia.org/wiki/List\\_of\\_scientific\\_misconduct\\_incidents](https://en.wikipedia.org/wiki/List_of_scientific_misconduct_incidents)

## Contact Address

Nepal Physical Society

**P.O. Box: 2934**

**Tri-Chandra College,**

**Ghantaghar, Kathmandu, Nepal**

**URL:** <https://nps.org.np/>

**e-mail:** [info@nps.org.np](mailto:info@nps.org.np)



# Gallery

## *Snap shots of virtual class of NPS School of Advance Computing*

