

**A Report of**  
**Activities in RC – 04 (UP)**  
***NATIONAL REVISION WORKSHOP IN PHYSICS– 2021***  
***Nurturing Students during Pandemic***

Indian Association of Physics Teachers RC-4 (U. P.) organized one-week online workshop entitled, “National Revision Workshop in Physics: Nurturing Students during Pandemic” NRWP-2021 during 29<sup>th</sup> May-4<sup>th</sup> June, 2021 in association with Christ Church College, Kanpur; Bareilly College, Bareilly; Govt. P. G. College, Badaun; and Ewing Christian College, Prayagraj. In this workshop around 700 students and faculty members from across the country registered and actively participated in it. Introduction of workshop was given by Dr Sundar Singh, RC-04 secretary and organizing secretary, NRWP-2021 who told the participants and guests about its objectives and how the workshop will progress. The workshop started with Saraswati Vandana. Dr. R. K. Dwivedi, president RC-04 and convener, NRWP-2021 delivered the welcome address and requested the chief guest, Prof. Vinay Kumar Pathak, hon’ble Vice Chancellor, CSJMU university, Kanpur & AKTU university, Lucknow. He explained the importance of Physics to everyone, and make us aware that- How Physics is playing role around the world in present scenario. Guest of Honour, Prof. K. N. Joshipura, General Secretary, IAPT delivered his key note lecture on, “Nuclear fission: physics, technology and stories”. He enlightened us about nuclear fission, technology and some short stories related to researches on nuclear explosions and its controlled and uncontrolled effects. Vote of thanks was delivered by Dr. Sanjeev Rathore, Executive member RC-4 (U.P.). The inaugural session was conducted by Dr. Sundar Singh and chaired by Dr. B. P. Tyagi, chief coordinator IAPT exams. The speaker in first technical session, Dr. Anil Kumar Singh, national coordinator NGPE and convenor, NRWP-2021 discussed about “Fundamentals of Semiconductor Electronics: Transistors” in an elaborative manner which was highly appreciated by the participants.

**INDIAN ASSOCIATION OF PHYSICS TEACHERS**  
**IAPT, RC-4 (Uttar Pradesh)**

**Organizing One Week Online**

**“National Revision Workshop in Physics: Nurturing Students during Pandemic”**  
**(NRWP-2021)**

**May 29-June 4, 2021, Time: 03:30-05:30 PM**

**Registration link-<https://forms.gle/3hbaRkV8PqJLubdy9>**

**WhatsApp Group Links for Participants:**

**Group V-1: <https://chat.whatsapp.com/BtmT5zkQKil8F168d2tIAN>**

**Group V-2: <https://chat.whatsapp.com/HbDWALNh1jg81AQAZeQuYW>**

**Join Webinar at Zoom-**

**<https://us02web.zoom.us/j/85148001273?pwd=YTR0d3Qwb25iZXpCMzVOTkdMU25TQT09#success>**

**MEETING ID: 851 4800 1273**

**PASSCODE: 433386**

**Detailed Programme of Workshop**

## Day-01: Saturday; 29 May, 2021

### Inaugural Session

S. No.	Programme	Eminent Speakers	Minute to Minute Prog. (pm)
1.	Introduction of Workshop	Dr Sundar Singh, Secretary IAPT-RC-4 & Organising Secretary NRW-2021	03.30-03.33
2.	Saraswati Vandana	Online through Social Media (by the Host)	03.33-03.36
3.	Welcome Address	Dr R.K. Dwivedi, President IAPT-RC-4 & Convener NRW-2021	03.36-03.39
4.	Address by the Chief Guest	Prof. Vinay Kumar Pathak, Hon'ble Vice Chancellor, CSJM University, Kanpur & Abdul Kalam Technical University, Lucknow	03.39-03.45
5.	Address by the Guest of Honour	Prof. K.N. Joshipura, General Secretary, IAPT "Nuclear fission- physics, technology and stories"	03.45-04.25
6.	Address by the Special Guest	Dr. B.P. Tyagi, Chief Coordinator, IAPT-EXAMS	04.25-04.28
7.	Vote of thanks	Dr Sanjeev Rathore, Executive member IAPT-RC-4 & Organising Secretary, NRW-2021	04.28-04.30

#### Technical Session 01: Chairperson- Dr. B.P. Tyagi, Chief Coordinator, IAPT-EXAMS

1.	Introduction of the Speaker	By the chairperson	04.30-04.32
2.	IL-01 *	Dr. Anil Kumar Singh, National Coordinator, NGPE & Convener, NRW-2021 Associate Professor & Head of Physics Department Ewing Christian College, Prayagraj <i>"Fundamentals of Semiconductor Electronics: Transistors"</i>	04.32-05.30

#### Day-02; Sunday; 30 May, 2021

#### Technical Session 02: Chairperson- Dr. Shraddha Gupta, Head Department of Physics, Govt. P. G. College, Badaun

1.	Introduction of the Speaker	By the chairperson	03.30-03.32
2.	IL-02	Dr. T.N. Surya, Associate Professor & Head Physics Department, Vardhman College, Bijnor <i>"Let's Revise Wave Optics"</i>	03.32-04.30
3.	Introduction of the Speaker	By the chairperson	04.30-04.32
4.	IL-03	Dr Pramod Kumar, Associate Professor, Department of Physics, IIIT, Prayagraj <i>"Hall-effect in semiconductors and applications"</i>	04.32-05.30

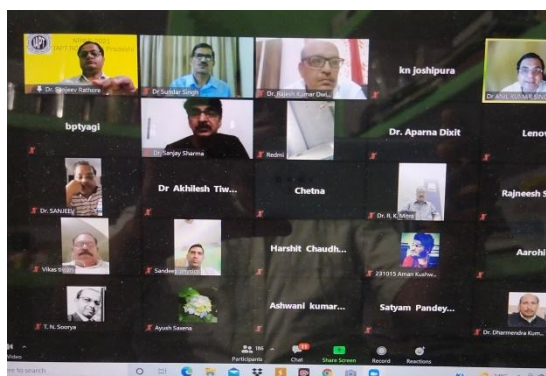
#### Day-03; Monday; 31 May, 2021

#### Technical Session 03: Chairperson- Dr Aparna Dixit, PSIT, Kanpur

1.	Introduction of the Speaker	By the chairperson	03.30-03.32
2.	IL-04	Dr Rajiv Giri Associate Professor, Centre of Material Sciences, University of Allahabad, Prayagraj <i>"Crystal Structures of Solid"</i>	03.32-04.30
3.	Introduction of the Speaker	By the chairperson	04.30-04.32
4.	IL-05	Dr Akhilesh Tiwari, Associate Professor, Department of Physics,IIIT, Prayagraj <i>"Negative Refractive Index materials and it'sapplication"</i>	04.32-05.30
<p align="center"><b>Day-04;Tuesday; June 1, 2021</b>  <b>Technical Session 04: Chairperson- Dr Sanjay Kumar Sharma, Secretary, IAPT</b></p>			
1.	Introduction of the Speaker	By the chairperson	03.30-03.32
2.	IL-06	Dr R. K. Mitra Former Secretary, IAPT-UP-RC-4 <i>"The Visualization of Physics"</i>	03.32-05.30
<p align="center"><b>Day-05;Wednesday; June 2, 2021</b>  <b>Technical Session 05: Chairperson- Dr. Anil Kumar Singh, National Executive Member, IAPT&amp;National Coordinator, NGPE</b></p>			
1.	Introduction of the Speaker	By the chairperson	03.30-03.32
2.	IL-07	Dr Dharmendra Pandey Associate Professor, Department of Physics, PPN College, Kanpur <i>"Electromagnetic Waves"</i>	03.32-04.30
3.	Introduction of the Speaker	By the chairperson	04.30-04.32
4.	IL-08	Dr. Kamlesh Kumar Sharma Department of Physics, Invertis University, Bareilly <i>"Benchmark Study of Thermodynamics"</i>	04.32-05.30
<p align="center"><b>Day-06;Thursday; June 3, 2021</b>  <b>Technical Session 06: Chairperson- Dr. A. P. Srivastava, Treasurer, IAPT-UP-RC-4</b></p>			
1.	Introduction of the Speaker	By the chairperson	03.30-03.32
2.	IL-09	Dr Ashok Kumar Singh Professor, Department of Physics University of Lucknow,Lucknow	03.32-04.30

		<i>"Semiconductor Diodes"</i>	
3.	Introduction of the Speaker	By the chairperson	04.30-04.32
4.	IL-10	Dr D. K. Tyagi Associate Professor & Head, Department of Physics D. A. V. College, Muzaffarnagar <i>"Electrostatics: An Overview"</i>	04.32-05.30
<p style="text-align: center;"><b>Day-07;Friday; June 4, 2021</b>  <b>Technical Session 07: Chairperson- Dr. S.C. Samanta, Convener, D.P.K. B.C.C. Committee, IAPT</b></p>			
1.	Introduction of the Speaker	By the chairperson	03.30-03.32
2.	IL-11	Dr Avinash Chandra Yadav Assistant Professor, Department of Physics, Govt. P.G. College, Shahganj (Jaunpur) <i>"Special Theory of Relativity"</i>	03.32-04.30
<p style="text-align: center;"><b>Valedictory Session</b>  <b>Day-07:Friday; June 4, 2021: 04.30--05.30 PM</b></p>			
1.	Welcome Address	Dr. Anil Kumar Singh, Head, Department of Physics EEC Pryagraj and National Coordinator NGPE & Convener, NRWP-2021	04.30-04.35
2.	Saraswati Vandana	Online through Social Media (by the Host)	04.35-04.40
3.	Welcome of Chief Guest	Dr Sundar Singh, Secretary IAPT-UP-RC-4 & Organising Secretary NRWP-2021	04.40-04.45
4.	Address by the Chief Guest	Dr Amit Bhardwaj, Hon'ble Director, Higher Education Uttar Pradesh, Prayagraj	04.45-04.55
5.	Welcome of Guest of Honour	Dr Sanjeev Rathore, Executive member, IAPT-RC-4 & Organising Secretary, NRWP-2021	04.55-05.00
6.	Address by the Guest of Honour	Dr.S.C. Samanta, Convener, D.P.K. B.C.C. Committee, IAPT	05.00-05.25
7.	Vote of Thanks	Dr R.K. Dwivedi, President IAPT-RC-4 & Convener NRWP-2021	05.25-05.30

\* IL- Invited Lecture



## Fundamentals of Semiconductor Electronics: Transistors



**Dr. Anil Kumar Singh**

Head, Physics Department  
(Star Department)

**Ewing Christian College, Prayagraj**

(An Autonomous Constituent P. G. College of Allahabad University)  
The College with Potential for Excellence Awarded by UGC, New Delhi

Saturday, May 29, 2021

NRWP-2021

## शिक्षा संबंधी अस्वविधा पर चर्चा

अमृत विहार, बरेली

कोरोना काल में छात्रों की शिक्षा और परीक्षा संबंधी अस्वविधा दूर करने के लिए इंडियन एग्रेसोरेशन ऑफ फिजिक्स टीचर्स (आईएफटी) की गैजटिंग काउंसिल बरेली, कॉलेज बरेली,

क्राइस्ट चर्च कॉलेज कानपुर, इंडियन क्रिश्चियन कॉलेज प्रयागराज और राजकीय स्नातकोत्तर महाविद्यालय बदायूं के संयुक्त तत्वाधान में सात दिवसीय ऑनलाइन कार्यशाला से रविवार से शुरू की गई है। भौतिक विज्ञान के छात्र-छात्राओं की परीक्षा के संदर्भ में आयोजित सर्वेक्षण 4 जून तक चलेगी। कार्यशाला में लगभग 700 विद्यार्थियों एवं शिक्षकों ने संजीकरण किया है। कार्यशाला के आयोजक संस्थान बरेली कॉलेज के भौतिक विज्ञान के एसो. प्रोफेसर डॉ. सुंदर सिंह ने बताया कि इंडियन एग्रेसोरेशन ऑफ फिजिक्स टीचर्स के महासचिव प्रो. कमलनयन जोशीपुरा ने मासिक विद्यार्थी विच्छेदन एवं उसके स्थापकरी तथा

कार्यशाला

कार्यशाला में 700 विद्यार्थी व शिक्षकों ने कराया पंजीकरण

हार्निकारक प्रभावों के बारे में विस्तृत व्याख्यान दिया। कार्यशाला में आईएफटी की विभिन्न परीक्षाओं के मुख्य सचिवका जे. बीपी. ज्योती, डॉ. अनिल कुमार सिंह, डॉ. आरके द्विवेदी, डॉ. संजीव राठीर के अलावा इलाहाबाद विश्वविद्यालय, लखनऊ विश्वविद्यालय, इंडियन इंस्टिट्यूट ऑफ इन्फार्मेशन टेक्नोलॉजी प्रयागराज, छत्रपति शाहू जी महाराज विश्वविद्यालय कानपुर, चौधरी चरण सिंह विश्वविद्यालय मेरठ, एवं महात्मा ज्योतिबा फुले स्टेनलेड विश्वविद्यालय बरेली के विद्वान शिक्षकों ने व्यवधान दिए।

**वलासीफाई**

**सूचना**

मैंने अपना नाम सुगन्धा शर्मा से बदलकर सुगन्धा चतुर्वेदी कर लिया है। भविष्य में मुझे सुगन्धा चतुर्वेदी (पत्नी श्री योगेश कुमार शर्मा) के नाम से ही जाना जाये।

निवासी 297, ग्रामी निवास, सिविल लाइन्स, जिला बरेली

### बिजली उत्पादन का बड़ा स्रोत बनेगी नाभिकीय ऊर्जा

आज, कानपुर : नाभिकीय ऊर्जा से आज-काल में बिजली खींचा जा सकती है। रिक्टर से निकलने वाली ऊर्जा को पावो गर्म होकर भाप से तब्दील होता है, जिसे बिजली उत्पादन के लिए इस्तेमाल किया जाता है। भविष्य में यह बिजली उत्पादन का बड़ा स्रोत बनेगा। यह बातें भारतीय भौतिकी शिक्षक परिषद के महासचिव व सरदार पटेल विश्वविद्यालय गुजरात के सेवानिवृत्त प्रो. कमल नयन जोशीपुरा ने वेबिनार में कही।

क्राइस्ट चर्च कॉलेज कानपुर, बरेली कॉलेज बरेली, इंडियन क्रिश्चियन कॉलेज इलाहाबाद व राजकीय स्नातकोत्तर महाविद्यालय बदायूं के संयुक्त तत्वाधान में वेबिनार हुआ। इसमें न केवल छात्रों की संख्या बढ़ी। इसके खाती देशों पर हमारी पेटाएल व डीजल की निर्भरता खत्म होगी।

आइएआईटी व आईआईएएसकी जैसे संस्थानों में इस पर कार्य हो रहा है, जिसके सकारात्मक परिणाम

**वेबिनार**

- रिक्टर से निकलने वाली ऊर्जा पावी को करती है भाप से तब्दील
- अधिक विद्युत उत्पादन से खाती देशों पर भारत की निर्भरता होगी कम

भी सामने आए हैं। कार्यक्रम के दौरान छत्रपति शाहू जी महाराज विश्वविद्यालय के कुलपति प्रो. विनय पाठक ने कहा कि कोरोना काल में छात्रों के मार्गदर्शन व उनका ज्ञान बढ़ाने के लिए इस प्रकार के ऑनलाइन व्याख्यान जरूरी हैं। विश्वविद्यालय प्रशासन अब नोबल पुरस्कार विजेता शिक्षकों को इस अर्थ पर लाएगा, जिससे ज्यादा से ज्यादा छात्रों को लाभ मिल सके। इस मौके पर कार्यक्रम संचालक, क्राइस्ट चर्च डिप्टी कॉलेज के भौतिक विज्ञान विभागाध्यक्ष व भारतीय भौतिकी शिक्षक परिषद के प्रोफेसर डॉ. राजेश कुमार द्विवेदी व परीक्षा सेल के राष्ट्रीय सचिवका प्रो. बीपी ज्योती इससे अलग शिक्षक गोप्यता के

### What happen ?

When the charge is static

Generated Field – Electric field

**Method A**

Point Charge

$$\vec{E} = \frac{1}{4\pi\epsilon_0} \frac{q}{r^2} \hat{r}$$

Many Point Charges

$$\vec{E} = \frac{1}{4\pi\epsilon_0} \sum \frac{q_i}{r_i^2} \hat{r}_i$$

Charges distribution

$$\vec{E} = \frac{1}{4\pi\epsilon_0} \int \frac{dq}{r^2} \hat{r}$$

$$dq = \lambda dl ; \sigma ds ; \rho dv$$

**Method B**

Gauss law

Net outward electric flux through closed surface =  $q/\epsilon_0$

$$\oint \vec{E} \cdot d\vec{s} = q/\epsilon_0$$

$$\oint \vec{E} \cdot d\vec{s} = \int \rho dv$$

$$\oint (\vec{E} \cdot \hat{r}) dv = \int \rho dv$$

$$\oint \vec{E} \cdot \hat{r} = \frac{\rho}{\epsilon_0}$$

**Method C**

Poisson's equation

$$\nabla \cdot \vec{E} = 0$$

$$\oint \vec{E} \cdot d\vec{l} = 0$$

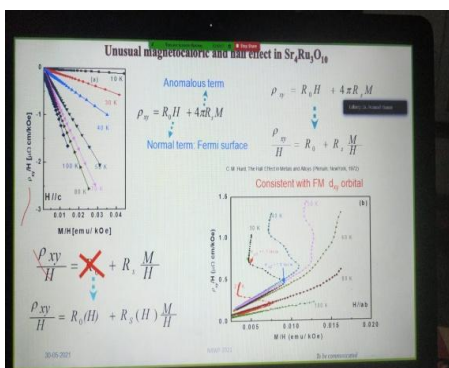
$$\vec{E} = -\nabla \phi$$

$$\nabla^2 \phi = \frac{\rho}{\epsilon_0}$$

$$\phi = \frac{1}{4\pi\epsilon_0} \int \frac{\rho}{r} dv$$

**DAY-2(30/05/2021)**

Day-2 technical session was chaired by Dr. Shraddha Gupta (Govt. PG college, Badaun). In this session, first lecture was delivered by Dr. T.N. Surya (HOD, Dept. of Physics, Vardhman College, Bijnor). He gave a brief idea about Wave Optics and discussed about interference, diffraction and polarization phenomena of light. Second lecture was delivered by Dr. Pramod Kumar, from IIIT Prayagraj and who enlightened the participants about Hall effect in semiconductors and applications.



INDIAN ASSOCIATION OF PHYSICS TEACHERS (IAPT) RC - 4 (Uttar Pradesh)

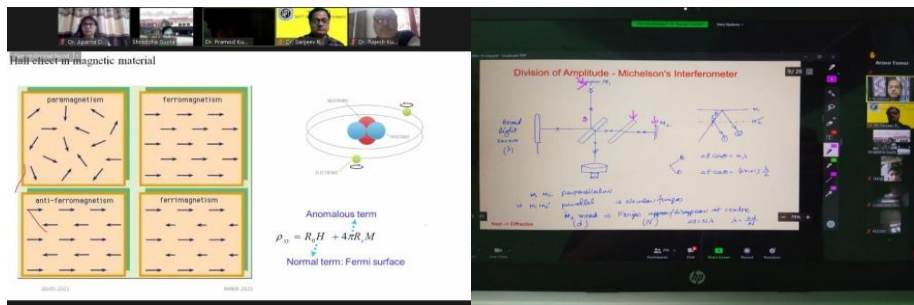
Prof. D. P. Khandelwal  
Birth Centenary Celebrations

National Revision Workshop in Physics:  
Nurturing Students during Pandemic (NRWP-2021)

**"LET'S REVISE WAVE OPTICS"**

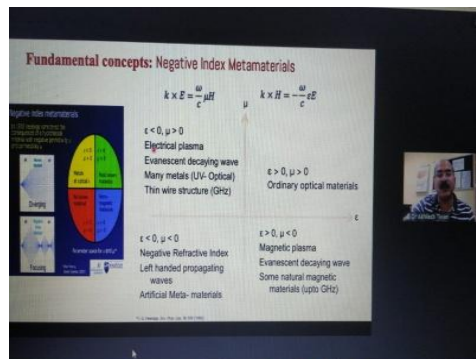
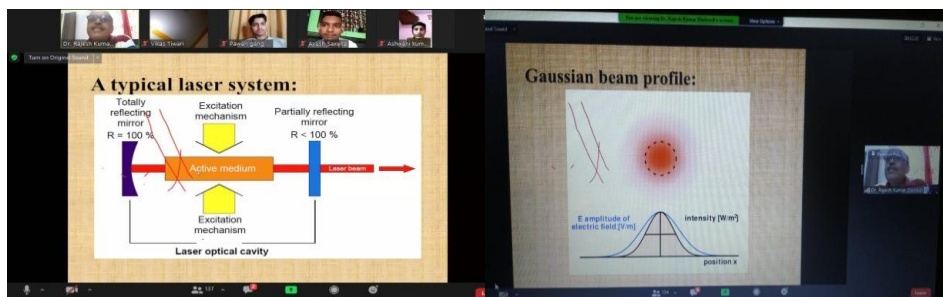
by  
Tribhuvan Narayan Soorya  
Vardhman College  
Bijnor - Uttar Pradesh

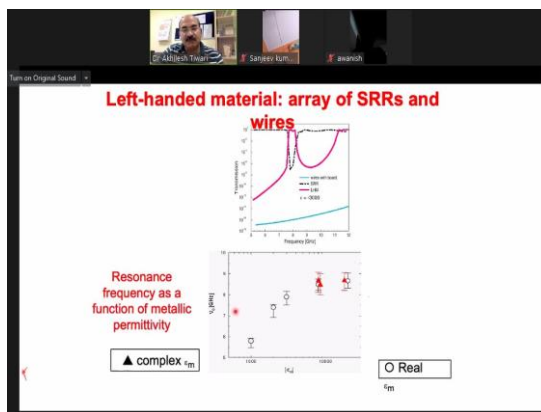




### DAY-3(31/05/2021)

Day-3 technical session was chaired by Dr. Aparna Dixit (Associate Professor, Pranveer Singh Institute of Technology, Kanpur). In this session, first lecture was delivered by Dr. R.K. Dwivedi (President, IAPT RC-4). He gave a brief idea about Lasers and discussed about its applications also. Second lecture was delivered by Dr. Akhilesh Tiwari, IIIT Prayagraj who enlightened the participants about negative refractive index materials like meta-materials and their applications.





जन्मशताब्दी वर्ष के उपलक्ष्य में तथा अल्बर्ट आइंस्टीन के सापेक्षता सिद्धांत पण्डित दिवस पर हुआ भौतिक विज्ञान का सात दिवसीय कार्यक्रम।

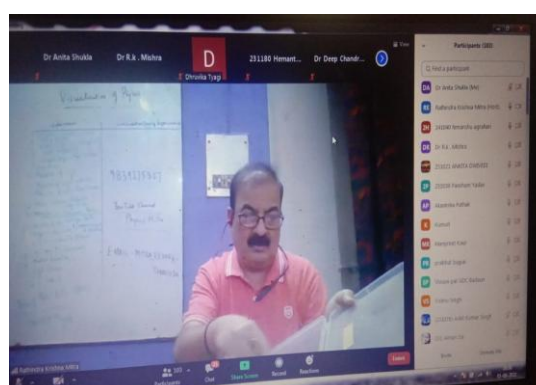
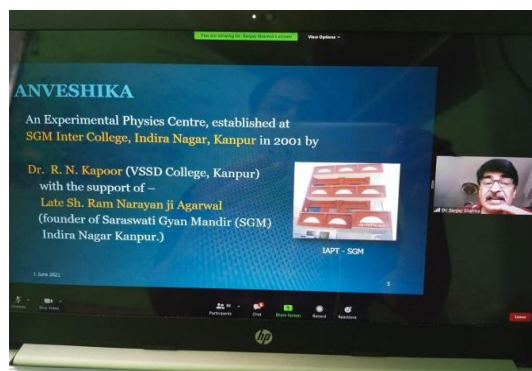
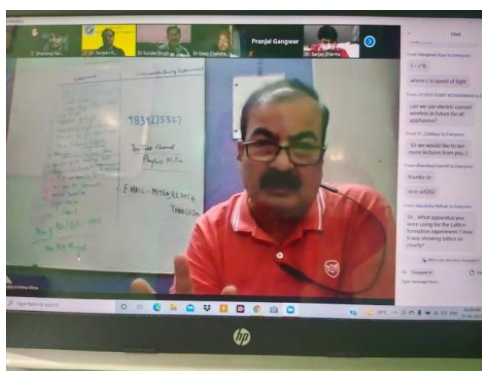
भौतिक विज्ञान विभाग के अध्यक्ष डॉ. राजेश कुमार शर्मा ने कार्यक्रम का उद्घाटन किया। उन्होंने कहा कि यह कार्यक्रम भौतिक विज्ञान के क्षेत्र में अग्रणी वैज्ञानिकों की याद में है।

कार्यक्रम के दौरान भौतिक विज्ञान के क्षेत्र में अग्रणी वैज्ञानिकों की याद में है।



**DAY-4(1/06/2021)**

Day-4 technical session was chaired by Dr. Sanjay Kumar Sharma(Secretary, IAPT). In this session, Dr. R. K. Mitra(Former Secretary, IAPT RC-04) broadly discussed about experimental utility of all physics experiments. Students were very keen to learn from this session. He enlightened us with the visualization of Physics. Dr. R. K. Mitra shown a number of experiments through which students learnt a lot about fundamental concepts and their applications.





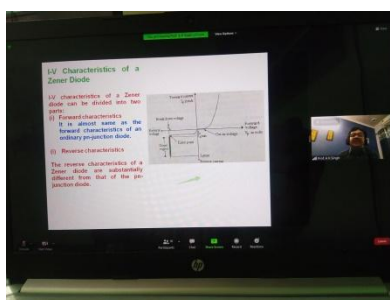
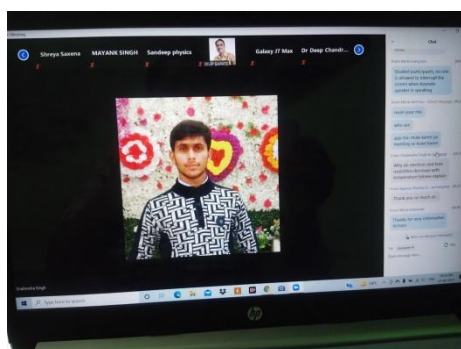
### DAY-5(02/06/2021)

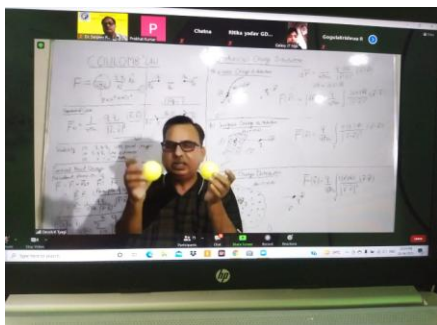
Day-5 technical session was chaired by Dr. Anil Kumar Singh (Convener, NRWP-2021). In this session, first lecture was delivered by Dr. Dharmendra Pandey (Associate Professor, PPN Degree College, Kanpur) on electromagnetic field theory. He broadly discussed about propagation of EM waves in different media. Next lecture was delivered by Dr. Kamlesh Kumar Sharma who spoke about Benchmark Studies in Thermodynamics. He discussed about fundamentals of heat and thermodynamics, their properties and applications in machines.



### DAY-6(03/06/2021)

Day-6 technical session was chaired by Dr. A. P. Srivastava (Treasurer, RC-04). In this session, Dr. Ashok Kumar Singh (Professor, Lucknow University) delivered a lecture on Semiconductor Diodes and their applications. Next lecture was delivered by Dr. D. K. Tyagi (Associate Professor, DAV College, Muzaffarnagar & Vice president, RC-04) who discussed about electrostatics: an overview).





**DAY-7(04/06/2021)**

### **Valedictory Session: 04:30-05:30 P. M.**

On day 7, in the technical session Dr Avinash Chandra Yadav (Govt. PG College, Shahganj (Jaunpur)) delivered his lecture on theory of relativity. This session was chaired by Dr S C. Samanta, Chairman DPKBCC committee of IAPT.

The valedictory session of [National Revision Workshop in Physics: Nurturing Students during Pandemic](#) was organized on 4<sup>th</sup> June 2021. The organizing committee invited all participants and esteemed faculty members from across institutions in India. This session started with Saraswati Vandana followed by the welcome address delivered by Dr. Anil Kumar Singh who also briefed about how this workshop was successful in achieving its goals. After this, Dr Sundar Singh, Secretary IAPT-UP-RC-4 & Organising Secretary NRWP-2021 welcomed Chief Guest Dr Amit Bhardwaj, Hon'ble Director, Higher Education Uttar Pradesh, Prayagraj. He shared the importance of higher education among students for the betterment of the society and asked teachers to engage themselves more and more in social activities. After his kind words, Dr. Sanjeev Rathore welcomed the Guest of Honour Dr Rajesh Gangwar, Joint Director, Council of Science & Technology, Uttar Pradesh, Lucknow who in his address appreciated the efforts of the organizing team. Dr. S.C. Samanta, Convener, D.P.K. B.C.C. Committee, IAPT & chairperson for this session addressed the audience and let them know many interesting points from the life story of IAPT founder, great visionary Professor D. P. Khandelwal. Dr Shraddha Gupta from Govt P. G. College, Badaun, and Dr Aparna Dixit & Dr Anita Shukla from PSIT, Kanpur helped in various respects in organizing this activity. The vote of thanks was proposed by RC-04 president, Dr R K Dwivedi.

**Great Visionary Prof. D. P. Khandelwal Birth  
Centenary Celebrations**



**Indian Association of Physics Teachers  
IAPT RC-4 (Uttar Pradesh)**

cordially invites you to the

**Valedictory Session of One week**

**NATIONAL REVISION WORKSHOP IN PHYSICS: NURTURING  
STUDENTS DURING PANDEMIC (May 29-June 4, 2021)**

**ON**

**Friday, June 4, 2021, at 4:30 p. m. on Virtual Zoom Platform**

**Link:**

<https://us02web.zoom.us/j/85148001273?pwd=YTR0d3Qwb25iZXpCMzVOTkdMU25TQT09>

***Chief Guest***

**Dr Amit Bhardwaj**

Hon'ble Director

Higher Education, Uttar Pradesh, Prayagraj

***Guest of Honour***

**Dr Rajesh Gangwar**

Joint Director, Council of Science & Technology, Uttar Pradesh, Lucknow

***Chairperson & Key Note Speaker***

**Professor S. C. Samanta**

Coordinator DPKBCC Committee, IAPT, Kolkata

**Dr. R. K. Dwivedi**  
President, IAPT-RC-4  
Christ Church College, Kanpur  
Convener

**Dr. Anil K. Singh**  
National Coord., NGPE  
Ewing Christian College, Prayagraj  
Convener

**Dr. Sundar Singh**  
Secretary, IAPT-RC-4  
Bareilly College, Bareilly  
Organizing Secretary

**Dr. Sanjeev Rathore**  
Executive Member, IAPT-RC-4  
Govt. PG College, Badaun  
Organizing Secretary

Dr R. K. Dwivedi  
President, RC – 04 (U. P.)

Dr Sundar Singh  
Secretary, RC-04 (U.P.)