

Physics Galaxy

Advanced Illustrations in Physics

For JEE (Advanced) & AIIMS

All Questions with Video Explanations

Ashish Arora

Mentor & Founder

PHYSICSGALAXY.COM

World's largest encyclopedia of online video lectures on High School Physics



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Dedicated

to

My Parents, Son, Daughter

and

My beloved wife

In his teaching career since 1992 Ashish Arora personally mentored more than 10000 IITians and students who reached global heights in various career and profession chosen. It is his helping attitude toward students with which all his students remember him in life for his contribution in their success and keep connections with him live. Below is the list of some of the successful students in International Olympiad personally taught by him.

NAVNEET LOIWAL	International GOLD Medal in IPhO-2000 at LONDON, Also secured AIR-4 in IIT JEE 2000 PROUD FOR INDIA : Navneet Loiwal was the first Indian Student who won first International GOLD Medal for our country in International Physics Olympiad.
DUNGRA RAM CHOUDHARY	AIR-1 in IIT JEE 2002
HARSHIT CHOPRA	National Gold Medal in INPhO-2002 and got AIR-2 in IIT JEE-2002
KUNTAL LOYA	A Girl Student got position AIR-8 in IIT JEE 2002
LUV KUMAR	National Gold Medal in INPhO-2003 and got AIR-3 in IIT JEE-2003
RAJHANS SAMDANI	National Gold Medal in INPhO-2003 and got AIR-5 in IIT JEE-2003
SHANTANU BHARDWAJ	International SILVER Medal in IPhO-2002 at INDONESIA
SHALEEN HARLALKA	International GOLD Medal in IPhO-2003 at CHINA and got AIR-46 in IIT JEE-2003
TARUN GUPTA	National GOLD Medal in INPhO-2005
APEKSHA KHANDELWAL	National GOLD Medal in INPhO-2005
ABHINAV SINHA	Hon'ble Mension Award in APhO-2006 at KAZAKHSTAN
RAMAN SHARMA	International GOLD Medal in IPhO-2007 at IRAN and got AIR-20 in IIT JEE-2007
PRATYUSH PANDEY	International SILVER Medal in IPhO-2007 at IRAN and got AIR-85 in IIT JEE-2007
GARVIT JUNI WAL	International GOLD Medal in IPhO-2008 at VIETNAM and got AIR-10 in IIT JEE-2008
ANKIT PARASHAR	National GOLD Medal in INPhO-2008
HEMANT NOVAL	National GOLD Medal in INPhO-2008 and got AIR-25 in IIT JEE-2008
ABHISHEK MITRUKA	National GOLD Medal in INPhO-2009
SARTHAK KALANI	National GOLD Medal in INPhO-2009
ASTHA AGARWAL	International SILVER Medal in IJSO-2009 at AZERBAIJAN
RAHUL GURNANI	International SILVER Medal in IJSO-2009 at AZERBAIJAN
AYUSH SINGHAL	International SILVER Medal in IJSO-2009 at AZERBAIJAN
MEHUL KUMAR	International SILVER Medal in IPhO-2010 at CROATIA and got AIR-19 in IIT JEE-2010
ABHIROOP BHATNAGAR	National GOLD Medal in INPhO-2010
AYUSH SHARMA	International Double GOLD Medal in IJSO-2010 at NIGERIA
AASTHA AGRAWAL	Hon'ble Mension Award in APhO-2011 at ISRAEL and got AIR-93 in IIT JEE 2011
ABHISHEK BANSAL	National GOLD Medal in INPhO-2011
SAMYAK DAGA	National GOLD Medal in INPhO-2011
SHREY GOYAL	National GOLD Medal in INPhO-2012 and secured AIR-24 in IIT JEE 2012
RAHUL GURNANI	National GOLD Medal in INPhO-2012
JASPREET SINGH JHEETA	National GOLD Medal in INPhO-2012
DIVYANSHU MUND	National GOLD Medal in INPhO-2012
SHESHANSH AGARWAL	International SILVER Medal in IAO-2012 at KOREA
SWATI GUPTA	International SILVER Medal in IJSO-2012 at IRAN
PRATYUSH RAJPUT	International SILVER Medal in IJSO-2012 at IRAN
SHESHANSH AGARWAL	International BRONZE Medal in IOAA-2013 at GREECE
SHESHANSH AGARWAL	International GOLD Medal in IOAA-2014 at ROMANIA
SHESHANSH AGARWAL	International SILVER Medal in IPhO-2015 at INDIA and secured AIR-58 in JEE(Advanced)-2015
VIDUSHI VARSHNEY	International SILVER Medal in IJSO-2015 to be held at SOUTH KOREA
AMAN BANSAL	AIR-1 in JEE Advanced 2016
KUNAL GOYAL	AIR-3 in JEE Advanced 2016
GOURAV DIDWANIA	AIR-9 in JEE Advanced 2016
DIVYANSH GARG	International SILVER Medal in IPhO-2016 at SWITZERLAND

ABOUT THE AUTHOR



The complexities of Physics have given nightmares to many, but the homegrown genius of Jaipur-Ashish Arora has helped several students to live their dreams by decoding it.

Newton Law of Gravitation and Faraday's Magnetic force of attraction apply perfectly well with this unassuming genius. A Pied Piper of students, his webportal <https://www.physicsgalaxy.com>, The world's largest encyclopedia of video lectures on high school Physics possesses strong gravitational pull and magnetic attraction for students who want to make it big in life.

Ashish Arora, gifted with rare ability to train masterminds, has mentored over 10,000 IITians in his past 24 years of teaching sojourn including lots of students made it to Top 100 in IIT-JEE/JEE(Advance) including AIR-1 and many in Top-10. Apart from that, he has also groomed hundreds of students for cracking International Physics Olympiad. No wonder his student Navneet Loiwal brought laurel to the country by becoming the first Indian to win a Gold medal at the 2000 - International Physics Olympiad in London (UK).

His special ability to simplify the toughest of the Physics theorems and applications rates him as one among the best Physics teachers in the world. With this, Arora simply defies the logic that perfection comes with age. Even at 18 when he started teaching Physics while pursuing engineering, he was as engaging as he is now. Experience, besides graying his hair, has just widened his horizon.

Now after encountering all tribes of students - some brilliant and some not-so-intelligent - this celebrated teacher has embarked upon a noble mission to make the entire galaxy of Physics inform of his webportal PHYSICSGALAXY.COM to serve and help global students in the subject. Today students from 221 countries are connected with this webportal. On any topic of physics students can post their queries in INTERACT tab of the webportal on which many global experts with Ashish Arora reply to several queries posted online by students.

Dedicated to global students of middle and high school level, his website www.physicsgalaxy.com also has teaching sessions dubbed in American accent and subtitles in 87 languages. For students in India preparing for JEE & NEET, his online courses will be available soon on PHYSICSGALAXY.COM.

Foreword

New generation students need to acquire an outcome based approach along with the ability to solve problems. It is well known that case or design based studies are more impactful in delivering such attributes to students. The book titled "**Advanced Illustrations in Physics for JEE (Advanced) and AIIMS**" contributed by very seasoned expert Er. Ashish Arora is a well thought of masterwork in this direction.

It is interesting to note that this book covers more than 700 advance problems with illustrations. Detailed explanations have been included with video solutions so that students are able to grasp the fundamental examination edge of JEE Advanced and AIIMS. Every illustration is based on specific experimental analysis and practical situations from real life so that students can understand how questions are framed in competitive exams. All illustrations are divided in several topics covering all aspects of JEE/AIIMS level in Advance Physics.

I am confident that potential aspirants will find this book most suitable to enhance understanding of the subject as well as improve their performance in competitive examinations.

My best wishes to all!

Date : February, 2019

Prof. Sandeep Sancheti

Ph. D. (U.K.), B.Tech. FIETE, MIEEE

VC, SRMIST, Chennai & President, AIU, New Delhi

Preface

For a science student preparing for JEE Main & Advanced or NEET, Physics is the most important subject. Contrary to other subjects, it requires logical reasoning and high imagination of brain. It is very difficult to achieve a goal in the present age of competitions without a clear understanding of concepts in Physics. If you wish to make the concepts of physics strong, you should try to understand core concepts of physics practically rather than focusing too much on theory. Physics questions asked in JEE Advanced or AIIMS are usually based on specific physical situations and the aspirants of these exams need excellent logical development of brain for solving these problems.

This book is designed for quick reference of advance illustrations video lectures available on 'Physics Galaxy' YouTube channel. It is a proven fact that audio visual memory of human brain has stronger retention than the written content. Therefore, if a student watches these lectures carefully, he will be able to recall the entire lecture quickly during revision. In case of any confusion in understanding, students can scan the QR code using any 'Android' or 'iOS' device printed on each page of notes to open the respective video lecture to understand the concept better.

All the Physics Galaxy Advance Illustrations are based on different physical situations. Referring to these illustrations regularly, helps the student to comprehend and solve questions of the JEE Advanced and AIIMS level.

The handwritten format of the screenshots gives a clear understanding of the application of concepts explained in the lecture, so that students can grasp concepts quickly and revise easily.

In this book of compiled screenshots of the video explanations, I have tried my best to make the content error-free but owing to the nature of work, inadvertently; there is possibility of mistakes left untouched. I shall be grateful to the readers, if they point these out to me oblige me by giving their valuable and constructive suggestions via emails for further improvement of the book.

February, 2019

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