

Introduction

- Detailed solutions to all problems are provided in the PhysOlymp.com system, which encourages to try several approaches and think at least one full day before looking at the official solution
- With any suggestions please write at feedback@physolymp.com

You are using a web application that at some extent is similar to the Physics book, but is more than a regular textbook. Numerous currently available publications containing collections of physics problems have either just a short answer for exercises or detailed solutions in the end of the book. The first type of the books is very useful, forcing the students to think about the problem in order to try different approaches for obtaining the final answer. However, if the student is not familiar with some specific methods, then he or she will get stuck without making any further progress. Another category of books (with detailed solution provided) can give insight on the new methods, but is less useful to the students, as very few people can resist the temptation of peeking at the official solution after a sloppy attempt of solving the problem. The most important advice for novices is that "*Reading Solutions without actual thinking and without trying hard to solve the problem will not make you any better in problems solving*"



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A novel feature of the PhysOlymp is that detailed solutions are provided to all of the problems, but those solutions can be seen only after several attempts to solve the problem. Ability to earn virtual points for each correct problem should bring additional pleasure of solving some challenging task, without looking at the solution

PhysOlymp is not trying to compete with the other numerous excellent Physics textbooks, but rather compliment them. In the

following chapters a collection of problems and approaches that are mostly suitable for Physics Olympiads is presented. Those problems are not so easy as the regular high school physics questions, while at the same time

PhysOlymp material does not have scary symbols of accurate formulations from University level Physics books

It is assumed that you have at least some minor knowledge of Physics. If not, there are a lot of materials in Internet with video lectures such as Khan Academy or numerous channels at the Youtube. The issue is that after watching those videos a student can obtain only basic understanding of some laws, with stories told in a popular way about when and how something was demised, but still in most cases it does not get much closer to solving actual problems from Physics Olympiads. Main goal of this course is to provide tools, tips & tricks, and a special selection of examples and problems that will move toward solving problems of Physics Olympiads



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Some of the recommendations out of dozens of available Physics books and video lessons are:

- **Halliday & Resnick:** "Fundamentals of Physics" - an excellent book for entry level. Any of the editions are good for gaining fundamental knowledge of Physics.
- **Khan Academy** resources. This source is intended for those who apprehend better the information that is given by small portions written at the blackboard and explained

with simple words and detailed equations. The difficulty level of the presented material is far from Physics Olympiads, but it can give invaluable fundamental knowledge for further practice of Olympic problems.

- All of the books by **David Morin**. They contain a rare style of presenting Physics related material with the first-rate selection of interesting, tricky and challenging problems.
- **Irodov**: "Problems in General Physics" - contains a large collection of Physics problems for all topics from Newtonian Mechanics to Modern Physics. The book was written for Undergraduate students, so there are some occasional topics outside of the IPhO/APhO syllabus, but mostly it is relevant for high school students, who are interested in Physics Olympiads.
- * **Feynman**: "The Feynman Lectures on Physics" - for advanced readers. Those books have a lot of scary notations for beginners, but they are very good for winners of the Physics Olympiads. Lectures encourage to look at the Physics not only as a set of mathematical equations but as concepts. Reading Feynman's book will get a student closer to a clear, deep understanding of Physical phenomena and why some of the equations are used.

Another important advice to the reader is to *perceive Physics Olympiads only as a tool for understanding Physics*. Don't lose interest in Physics in case of small failure at any level of the Olympiads. It is a long adventurous way. The most important thing is to keep being curious about nature, making predictions based on its known laws and being fascinated about phenomena not tackled yet, such as Teleportation.

Good luck!

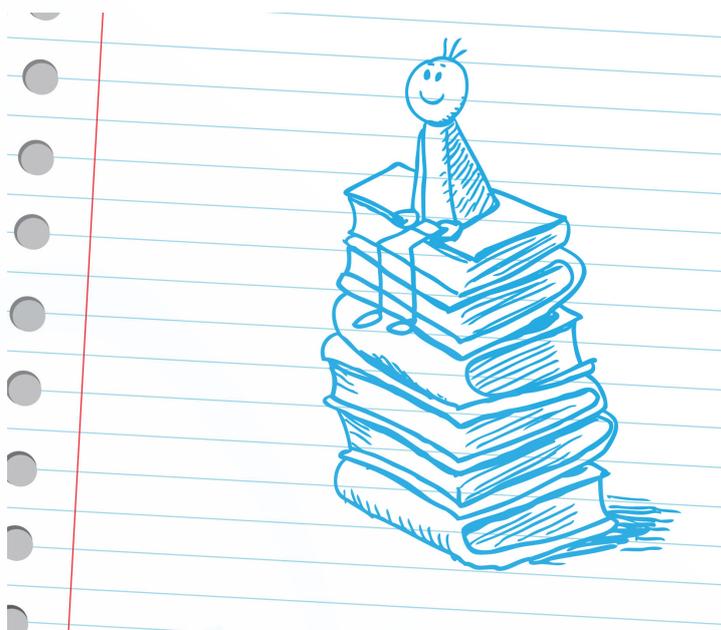


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Pavel