

## How to prepare to your physics fight?

### When you are a reporter:

1. Prepare a 10 minutes long presentation. Not all of the work you have done can fit in it and there is no need for it! Imagine a person who hasn't heard anything about the problem before (though knows physics on the level of university courses) like a fellow undergrad student. Be sure to train a few times in real conditions (present out loud, if possible in front of a small crowd of friends/colleagues/etc... that can give you feedback)
2. Some of the problems are purposely ambiguous and you should clearly explain which question you are trying to answer and which assumptions you are making.
3. For a lot of problems the basic idea is to develop first a qualitative understanding of the effect, then a quantitative theory, predict or estimate some values, perform some experiments and compare the results of the theory and the experiments. Of course, every problem is individual and this plan might change completely, but we suggest you start by keeping these points in mind to be sure not to miss any of them.
4. Remember that no-one can read a slide full of formulas quickly enough. Select only the formulas you need and leave the mathematical derivation of them on a separate slide among the supporting ones. You can always put up this slide during the discussion.
5. However, check all the equations you put up for their reasonability, consistency of the notation and dimensions.
6. Do not forget about other supporting slides: schemes, extra experiments and setups, derivations, data sets/graphs or anything that you think can come up during the discussion.
7. A general rule for a presentation: people cannot both listen and read. If you have text on your slides, you need to give the audience time to read it. It usually does not look that great, so simply - less text on the slides, more bullet points and figures.
8. Another general rule. Everything you put on a slide must have a purpose. If you do not talk about one graph, figure, chunk of text, etc... that is on your slide, then remove it.
9. Test your presentation on a projector and screen before giving it. The contrast, brightness and colour from the projector may not be the same as it is on your screen and may not be controllable. This could cause points on a graph or a diagram to be un-readable.
10. Always try to see your presentation from the point of view of the audience. Would you fall asleep on the slide number 2? That's not the effect you want to achieve!
11. Remember to use large enough labels, names of the axes and dimensions of all the values.
12. Use a simple colour scheme and avoid colour gradients in the background, this may not fit well with your figures and graphs or even the background of the room.

13. A good presentation is only half of the fight. Your active participation in the discussion is also very important. Think in advance what would you point out as an opponent and be prepared to answer.
14. Do not hesitate to admit if the opponent has made a good comment. Your goal is a good-quality discussion that improves the solution and the jury's understanding of this solution. The opponent and reviewer are your allies and not enemies on this way.
15. Think in advance about your last words but be flexible. You are given one minute to summarize the discussion. A good summary would help the jury if the reviewer hasn't done the job.

**When you are an opponent:**

1. Prepare empty slides with your general style (headers, footers and title etc) in advance. You can put a few general statements on them even before the presentation. Also, keep in mind that it is not at all mandatory to use slides for the opposition.
2. List for yourself in advance the possible pitfalls of the solution. Ideally you should know the physics of the problem even better than the reporter, because you need to grasp quickly his/her logic and help improving the solution.
3. Listen to the presentation very attentively. In the end ask questions about the parts you did not catch.
4. The opponent speech is quite long, and it does not look good if you focus on minor details. Think big! Is the problem solved fully? Are the assumptions correct? Is a good qualitative understanding of the phenomenon achieved? And most importantly, what can be improved and how will it affect the result?
5. Mention positive things, not only the critics. Often there are two separate slides called "+" and "-" but it does not have to be this way. You can also choose any other way of structuring that you find appropriate, say, "theory", "experiment" and "comparison".
6. If you have some results that prove that the reporter is making some big mistake, show them. State clearly why you are demonstrating your results. Avoid discussing your own results, however you may use your own experience or indications as a basis to challenge any potentially incorrect theory or conclusions made by the reporter.
7. Be active in the discussion, but not aggressive. Your goal is a good-quality discussion that ideally improves the solution of the reporter and the jury's understanding of this solution.
8. If you are impressed with the solution, do not hesitate to admit it. Remember that statistically if the report is good, both the reporter and the opponent get high average grade. Given, of course, your opposition is on the level.
9. After your opposing speech, you are expected to lead the discussion to the key points that you think are worth spending time on. The time allowed for discussion is short, so use the best of it.

10. Your team should be active during the general discussion. Some jury members particularly appreciate team work. But the general rule applies here: be courteous and say something only if it is meaningful.
11. Remember not to pass verbal notes and keep it to written notes only when the team assists the presenter (applicable to all sides).

**When you are a reviewer:**

1. The most difficult part is to avoid being a second opponent. If you like, you can think about it as being a jury member. You may ask the reporter and opponents to clarify their positions about a topic, was it mentioned or not during the previous discussions.
2. Prepare empty slides in advance with your general style. You can put a few general statements on them even before the presentation. As for the opposing speech, keep in mind that slides are not mandatory.
3. List for yourself the possible pitfalls of the solution. The jury members cannot ask questions during the discussion and you are their delegate. Try to think as if you were a jury member and had to grade the performance of the other two teams.
4. Listen to the presentation and opposition very attentively. In the end ask questions about the parts you did not catch.
5. Summarize in your speech up to which level the problem is solved and who contributed what. Point out what are the holes you see in the solution, although do not mention a possible solution, this is not your role. Instead, ask the reporter and opponents what is their opinion on the matter. You may even ask specific questions to a specific role depending on how relevant it was to their contribution.
6. Be active in the discussion, but not aggressive. Address both the opponent and the reporter. Your goal is a good-quality discussion that improves jury's understanding of this solution as well as the overall quality of the reporter's solution.
7. If the discussion gets stuck in a loophole, it's your duty to bring it on a new level by acknowledging the fact directly.
8. The web is full of tips that can help you to craft the best possible presentation. Do not hesitate to read and watch about it, it will surely be useful for the tournament and your career in general. Here are a few examples : [How to avoid death by Powerpoint \(https://www.youtube.com/watch?v=lwpi1Lm6dFo\)/](https://www.youtube.com/watch?v=lwpi1Lm6dFo/) [Giving presentations worth listening to \(https://www.youtube.com/watch?v=NUXkThfQx6A\)](https://www.youtube.com/watch?v=NUXkThfQx6A) / [Body language, the power is in the palm of your hands \(https://www.youtube.com/watch?v=ZZZ7k8cMA-4\)](https://www.youtube.com/watch?v=ZZZ7k8cMA-4).