

## Speaking at the Graduate Colloquium

The purpose of the Graduate Colloquium is twofold:

First, it serves as an opportunity for the speaker to practice giving a presentation in front of a larger audience that is not necessarily comprised of experts in the topic of the talk. Second, the audience is exposed to some interesting topics in Mathematics or Statistics, that they, typically, would not see in this form on their own. To achieve both goals, prospective speakers should keep the following in mind:

- Any graduate student at every stage of her/his program can give a talk. Don't wait until your last term! (PhD students must now have satisfied all degree requirements with the exception of their thesis by the end of their third year in the program.)
- The main purpose of your presentation is **not** a thesis defence. You are not required to report on your own research results. Rather, you should pick a topic that is interesting to you and which you want to share with your colleagues. This *may* be the general area of your research; it *may* be the actual thesis project you are working on. But it does not have to be. It could be something completely unrelated. If you know of an interesting and nonstandard way of constructing the real numbers, or an interesting algorithm for escaping a labyrinth, or if you want to present a solution to the marriage problem, or anything else that you think might be fun, that is just as fine.
- The presentation should be non-technical. Please refrain from giving too many technical proofs; emphasize the big picture, the general ideas. Introduce concepts that you assume are not familiar to all. For algebraists this *might* mean you need to explain (with motivation and examples) what a group action is; for statisticians this *might* mean, you must explain (with motivation and examples) what a Poisson distribution is. On the other hand, you do not need to explain what a normal distribution is (or, in the case of algebra, what a group is). But it never hurts to remind everyone briefly what even well known concepts mean.
- A mistake made often is that the speaker is afraid of being too "elementary" in the presentation. This is almost never the case. Don't be afraid of being too simple. The audience will like your talk much better if they understand a large part of it, as opposed to when it is incomprehensible to non-experts but merely sounds "fancy."
- Give plenty of motivation, why a particular theory is useful, why a particular problem is interesting (are there applications to other areas or problems in Math or Stats? Are there applications to the real world? Is it just such a "natural" question to ask, that one simply has to study it?). If you work on Differential

Equations, say, think about what you would expect from a talk on Algebraic Geometry, and then try to make your talk interesting to geometers as well.

- Start with an overview of the general research area. Go from the general to the specific. If, towards the end of the talk, you want to tailor some of what you say to experts in your own or closeby areas, then that is also fine. Of course, it is to be expected that a talk on statistics will be more accessible to statisticians, and a talk on pure mathematics will appeal more to pure mathematicians. But any effort to even this out a bit is usually greatly appreciated.
- Give many examples! In particular, if you cannot expect that a difficult concept is known to the majority of your audience, it might actually make sense to work with a specific example *only* and mention the general concept/case only in the end, if at all. For instance, while most students will know what a path connected topological space is (this is the reason, this example is chosen here), when giving a talk on covering spaces and the fundamental group, it might be worthwhile to develop the theory along examples (e.g. the donut and the sphere).

Finally, two technical remarks:

- Stay on time. Try not to go over by even one minute, and if you do have to, ask the session chair for permission, who will typically give you a few minutes extra time, but who will not give you ten.
- Don't go too fast. If you, while giving the presentation, think that you are terribly slow, then you are usually going at an appropriate speed (in particular, if you have never given such a talk before). When using a projector, please keep in mind that most of your audience don't have a photographic memory, and need plenty of time to absorb your slides.

The upshot is, **keep in mind your audience!** The vast majority of your listeners will not be experts in your research area. The greater part of your presentation should be accessible and interesting to a broad audience with mathematical and statistical knowledge far superior to the general population, but who are not specifically experts in your area of research.