Quick initial note:

Welcome to the Vieregg Group. The goal of this document is to share expectations that I have for Ph.D. students in my research group in order to help make the process of earning a Ph.D. a little more transparent – to add clarity, reduce anxiety, boost efficiency, and ultimately increase your scientific productivity and advance your education.

We are all part of a team, each with our own roles, and our group is part of a set of broader research teams. As such, the basic operating principle of our group is that we work with each other to help each other, treat each other with respect, and maintain professionalism in our work environment.

Meetings:
- You should attend group meeting, and make slides for group meeting when you have something to discuss. The natural cadence should be approximately every 2 weeks. The goal is to get feedback on your work, so you shouldn't wait until you think you are done with a project.   Making slides is a great tool to use to formulate your thoughts on what you are doing. It is OK to just show plots or pictures and give context for what you are doing so the rest of the group can get up to speed and help you make progress. You should listen to what other people in the group are presenting, and give them feedback and ask questions. You should upload your group meeting slides to the group wiki to document your work.
- Email me to schedule a meeting with me if you find that your pace of progress is slower than you would like, or if you have other work-related issues (broadly speaking) that you would like to discuss.
- You should come prepared for 1-1 meetings with an update on your work (including slides if it makes sense), any questions you have about how to figure out the next steps on your work, and/or any questions you have about academics, collaboration dynamics, or logistics. You should have a way to ensure you remember any feedback I give you (a note pad or computer to take notes) and then try to incorporate that feedback into the work you are doing in the next week, so that you can present the answers to questions (by making plots requested for example) either at group meeting or our next 1-1 meeting.
- You should attend telecons relevant for the project you are working on, including sub-group telecons (analysis, simulations, hardware, engineering), every week. This is a few telecons per week for each person. You should pay attention to all the talks on a telecon, and if you don't understand what is happening, ask someone else in the group. One way to make telecon time more productive is to take telecons together in a conference room, rather than individually in our own offices, so that you can ask questions in real time to the people in the room.
- When you need collaboration feedback, or when your project is ready for a telecon, you should make slides, upload them, and present them on a telecon. If you would like feedback ahead of the telecon, you can ask more senior people in the group to look at slides before you present them.

- You should join the appropriate email lists and Slack channels. This could include (but probably won't include all of these) vieregg_lab, kicp_all, kicp/A&A announcements, ARA collaboration list, RNO-G collaboration list, PUEO collaboration list, PUEO engineering list, IceCube-Gen2 list, various simulation/analysis lists as needed for RNO-G/ARA, BEACON list. There is a slack workspace or channel for nearly all of these, too!

Schedules:

The overarching goal is for you to be responsible for your own progress, and keep your eyes on the prize (in this case, building a body of work commensurate with earning a PhD, and becoming an independent researcher). To do that, you will need to keep to project schedules and deadlines. In general, since you will be working in areas that are important for the success of our projects and collaborations as a whole, if you don't keep up with the general pace of work in the group and in the collaborations, you will not be able to take on leading responsibilities. In addition, there are critical times when you should make sure to be available if at all possible because your education (both in that moment, and in your ability to lead efforts in the future) will suffer if you do not make these critical times (e.g. deployments, meetings, deployment preparation, etc.) a priority in your scheduling. With all of that in mind, here are some guidelines:

- Graduate school in general has a lot of flexibility on the schedule you do your research. In general, you should be in person in ERC most days of the week, during most of daytime working hours. In person interactions are an essential part of our work, both within the group and in the broader institute. Casual interactions are very important, and that can only happen if everyone is usually around at the same time. I am also fairly over-scheduled, which means that if you are here on weekdays during the day, there will naturally be a higher cross section. You should avoid outside commitments during these hours, unless necessary (e.g. doctor's appointments, dependent care commitments, other appointments, occasional recreational activities, etc.).
- Our work is cyclical: when an experiment is getting ready to deploy, there are times when you will need to come in at night and/or on weekends, and to put in as many hours as you are able to in a given week. These times are critical for your development as a researcher and you don't want to miss them. There are other times when there is a lot more flexibility.
- You should try your best to schedule time off at a time that does not conflict with busy times where we are preparing/integrating experiments, or preparing for meetings or reviews. You should check in with Abby about when you plan to take time off.
- Beyond your 1st year of graduate school, you should typically take between 2-4 weeks total of time off per year, including time off over winter and spring break. When it is your time off, you will still be expected to answer emails to advance research, unless you let us know that you can't. It is OK to take about one week per year where you do not answer emails! You should try to tie up loose ends before you take your time off so that others can continue to make progress while you are gone. If you line up your time off with when others tend to take time off, that will help you progress faster in your research (this tends to be the last two weeks of December and mid-July-August in

non-deployment years) and will ultimately optimize your time in graduate school and advance your education faster.

- You can telecommute a small number of weeks, as long as you do it responsibly, and it doesn't repeatedly interfere with your ability to attend talks in person, join department events, and have in-person interactions. In general, the last two weeks of December and mid-summer are times when a lot of our collaborators take time off, and this is a good time for things like either telecommuting weeks or time off. Please check with Abby if you are planning telecommuting time.
- If I email you an email that requires a response on a short timescale, or if someone else you are directly collaborating with emails you, you should generally respond relatively quickly, especially if it is to schedule a meeting or to answer a quick question.
- During regular weekday hours, you should be responsive to email. During nights and weekends, you should use judgment to make sure that you are an active part of our (international, multi-time-zone) team. Many people we work with find that doing email and Slack on nights and weekends is the only way to keep up with what is happening in the collaborations, especially because of the time zone differences and the pace of work. You are expected to respond to email in evenings/weekends if you are working closely with someone in another time zone (where you are expected to meet them half-way on schedule expectations), or if a collaborator or someone in the group, including me, writes you with an urgent question that requires a quick response (i.e. you can do it on your phone).
- You shouldn't work alone in the lab if the activity you're working on is especially hazardous. (This is also already covered by the lab safety training, but it is an essential guideline and merits additional messaging).

Travel:
- Once you have results to show from your work in graduate school, you will go to appropriate meetings and workshops in order to present your results, after discussion with me, and as long as funding and your time permits. If there are local conferences of interest, the bar is lower for attending them. In any case, you should present your work both locally and nationally when possible.
- You should attend collaboration meetings for projects you are directly involved in.
- You should consider attending and presenting at one summer school during your Ph.D. If you find a summer school that interests you, you should talk to me about it, and attend, funding permitting.
- Fieldwork: most students in our group have done campaign work either in Greenland, Antarctica, CSBF/Palestine, or at the BEACON site. Working in the field is a challenging experience, and it is not for everyone (and that is OK if it is not for you!). However, it can be extremely rewarding both personally and professionally. When we are working in the field, time is of the essence, as it is expensive for the project and there are limited slots available. Field work requires intense work, for sustained periods. The work that needs to be done in the field falls in the category of "do whatever it takes to get the project to work." This could include more mundane work or physical work like shoveling, moving cargo, etc. If you are on a deployment team, it is expected that you will work as hard as

other team members are working to the best of your ability, and this can be extremely intense at times, with long hours and no days off. The morale of the entire team rests on everyone participating and prioritizing the work over everything else, including recreational activities. You should communicate with the team lead if you need to take extra time off in the field to avoid burn out.

- Fieldwork: Unfortunately, not everyone who wants to go to the field for a given deployment will be able to, due to limited slots. Generally, after making sure that all required skills are on a field team, we tend to prioritize students who will do their Ph.D. project and have contributed significantly to hardware development on the experiment that is deploying – even still, there will not be enough slots for everyone on every deployment.
- Fieldwork: If you are in the field and you are harassed or are having other issues (health, personal, team dynamics that can't be solved by the team in the field), you should contact me. You can also contact the Dean of Students in the PSD who will be very responsive over email and can direct you to relevant University Resources, and you can talk to the Station Manager on site, who will know the correct resources at NSF.

Group and Collaboration Interactions:
- The primary expectation is that you are considerate to others and will help to build a supportive environment that is pleasant to work in for a variety of people with a variety of interests, talents, and skill sets.
- You should develop a technical/scientific support network within our group that includes postdocs or research scientists, so that you can get the technical and scientific support you need to answer questions.
- You should also support other students and scientists in the group and in the collaborations we work in by helping them with their projects, giving them advice, working with them, and being respectful to them as people and scientists.

Academics:
- When you are taking candidacy courses, it is understood that these classes are your primary priority. Post-candidacy classes are a balancing act with research (e.g. picking which quarters to take classes could be driven by your research obligations, and you may need to miss classes for research or vice versa).
- You should take the lead on forming your thesis committee and notify me when there are upcoming milestones that require a meeting (forming a committee, and each committee meeting thereafter). Generally, in our group, we will rotate through which faculty members we ask to be on your committee, so you may have to work with others in or near your year to coordinate, and work with Zosia to finalize your committee.
- For each committee meeting, you should ensure that we meet to review the slides ahead of time, and have your slides ready early enough to review them with me and incorporate my comments into slides and your thesis draft. I will also read your thesis draft, chapter by chapter, and send you comments on a few-week timescale.
- We will work together starting in your 2nd or 3rd year of graduate school to determine the body of work that will constitute your Ph.D work. As your Ph.D. progresses, we will work

together to pick a path and the plan of work for your Ph.D. that matches your skills and interests, as well as your career goals post-Ph.D.

- I expect that students will typically graduate in 5-6 years, but there is no set timeline. Some students might need longer, and sometimes the timeline of the experiments is such that it takes longer to complete your body of work (and sometimes missions crash on the runway!).
- Near the end of graduate school, if you are going to look for a job outside of academia/government agency research, there is an odd chicken-and-egg problem where you may want to finish your thesis before you look for a job. This is generally not the case if you are looking for a postdoc, or National lab, NASA, or other academic position. In this case, funding permitting, you may delay graduation and stay one additional quarter to look for a job.
- Your thesis should have science results in it that you led. This could be analysis of scientific data, often taken with instruments that you helped build, or work at the interface between theory and analysis.
- Aside from the specific efforts/projects you are working on, you should help more generally to make the group, collaborations, and projects function and succeed. This will include things like taking shifts, helping order equipment for the lab, doing calibration of scientific data, helping fill in the gaps where people are needed for instrument integrations and tests, organizing and purchasing parts, and helping other people in our group and collaborations complete projects they are working on.
- You should read papers relevant to our projects in the field as they come out (and to read the seminal papers), at the rate of at least 1/every other week, to stay apprised of the current state of the field. You should also read the papers describing the experiment(s) that you are working on, and follow relevant references to learn more about components of the experiment and/or theory that are relevant.
- Once you pass candidacy courses, you should attend a minimum of one talk every week. In general, I suggest you attend the KICP/A&A colloquium every week that you are able, both to develop a rapport with people in the institute and also because that series is in general quite interesting. You should also attend KICP seminars, EFI seminars, Physics colloquia, and other events as you find the topics engaging. If someone comes and gives a talk on something relatively closely related to your research, you should attend.
- You should expect to lead or co-lead writing at least one paper in graduate school.

Funding:
- You should research and talk to me about fellowship opportunities and apply as appropriate.
- I take on new Ph.D. students anticipating that students will be either an RA or on a fellowship after your 1st year, and I will continue to work to secure funding so that this is the case. I will do my best to anticipate the funding scenario of our group and give you warning if there is not enough funding to pay you on an RA. In this situation, we will discuss options, which may include TAing or pivoting projects (if there is funding for one project but not a different project). Proposals are on a ~3 year lifecycle, which means I

can't commit to multiple years worth of RA funding at one time – we have to adjust to the available funding over time.
- You can TA interesting classes if you want to (e.g. electronics).
- Travel for the group (collaboration meetings, conferences) are paid by group funding. You must keep receipts and you will be reimbursed. You will be reimbursed for cabs, hotels, ubers, airfare, and train fare. Food that is not included in the meeting/conference fees will be reimbursed up to the federal per diem rate (keep receipts). You will not be reimbursed for alcohol. Ask a senior student before you travel for the first time. If you need the group to front the money for airfare so you don't have to wait for as big a reimbursement, please talk to Abby, who can purchase your airfare for you.
- In general, a monitor, keyboard, and mouse will be provided by the group for the duration you are in our group. If there is not a suitable monitor/keyboard/mouse when you arrive, we will buy one. Once you have been in the group for about four quarters, we will purchase you a laptop if you do not own one already. These items are University Property and in principle need to be returned at the end of graduate school or when you leave the group. If you need access to a laptop before that time to do your work, please let us know.

General thoughts:
- If during or at the end of the first four quarters you are with our group, you decide to leave to do something else for any reason, or I decide that it is not a good match, we are both free to say so, and I will harbor no hard feelings. There is a good chance you would find a better match elsewhere if the match here is bad. I strongly believe that it is much better to change groups after one year than it is after three.
- If you have been with our group longer than four quarters, I will assume that you are planning to earn a Ph.D. in our group. There may be cases where it is clear that after this initial four-quarter period, continued collaboration/participation in the group is not advisable, and one of us decides you should find a different advisor. This should be an extremely rare case.
- We will work together to try to construct a Ph.D. that enables your future career goals. Depending on your career goals, the expectations that you and I should have from your Ph.D. work will change. You may want to develop different skills or networks depending on your career goals, and the breadth and depth of the body of work you may want to achieve in graduate school may change as well.
- Doing outreach and department service can be part of your body of work in graduate school.
- I am generally on email most of the time, including evenings/weekends. If you send me an email, I will respond (it might be immediate, or I may wait to respond if it seems like a response can be delayed a few days).
- I meet with students in my group 1-1 every other week; those meetings often have to be moved around due to travel conflicts, but we will pick a nominal standing time.
- If you are new to the group, I will meet with you 1-1 weekly for a few months to help you get settled in the group. Email me to schedule this if I forgot!

- Please reach out to meet if you want to get input on your work or to talk about your career; if you think of a new idea, or have other related questions.
- If I see that you are struggling, I will reach out to meet with you 1-1, and may set up weekly meetings for a few months. However, please don't wait for me to reach out to you if you know you are struggling! This is not a bad thing! Everyone struggles sometimes in grad school.
- I will try to keep a generally inclusive environment in the group, including responding to issues that may arise among members of our group in a professional way.