

EARLY CAREER

The Early Career Section offers information and suggestions for graduate students, job seekers, early career academics of all types, and those who mentor them. Angela Gibney serves as the editor of this section with assistance from Early Career Intern Katie Storey. Next month's theme will be Early Career Gratitude and Advice For a New Year. All Early Career articles organized by topic are available at <https://www.angelagibney.org/the-ec-by-topic>.



Good Ideas

Mathematicians Navigating Parenthood: Lessons Learned, Methodologies, and Useful Solutions That Were Beneficial During the COVID-19 Pandemic

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Navigating a career as a mathematician in academia, industry, or a national lab was challenging for many families with children before the COVID-19 pandemic. Then, the pandemic hit and the situation was exacerbated. Parents and parents-to-be were tested and challenged in ways unanticipated, with time for parental duties clashing with time for research, teaching, and service, leaving those wishing to be parents contemplating the feasibility of this balancing act of parenthood and work-life in a COVID-19 era and beyond. Many members in our mathematics community experienced these challenges first hand and persevered. Lessons were learned and different methodologies employed as many reimaged what work-life and home-life balance looked like. These lessons and methodologies can be useful

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in our future endeavors as parent-educators and researchers, and if shared can benefit others who are in parenthood or on the path to parenthood, as they seek to create a better harmony between work and home life. Thus, this article explores and showcases some of the discussions that ensued during a 2022 Joint Mathematics Meeting (JMM) Professional Development Workshop *Mathematicians Navigating Parenthood* organized by the authors. The article collects key discussion points and lessons learned, putting together useful solutions and resources, as well as unresolved questions. We report on strategies to help parents and parents-to-be succeed as well as present proposals on what departments could implement based on their individual policies to provide a welcoming environment to colleagues with, or expecting, children.

The Workshop

The workshop, held virtually on April 8, 2022, was attended by a diverse group of mathematicians of different races, gender, career levels including graduate students, and stages of parenthood, from “not there yet” to “I’m a veteran.” We additionally had participants who joined the workshop session from international locations with most participants in academia and others in industry.

The panel session was facilitated by our panelists: **Anne Fernando**, Professor and Chair of the Mathematics Department, Norfolk State University; **Hayriye Gulbudak**, Assistant Professor in the Department of Mathematics, University of Louisiana at Lafayette; **Carrie Manore**, Deputy Group Leader in the Theoretical Biology and Biophysics Group, Los Alamos National Laboratory; and

Shelby Stanhope, Associate Professor in the Department of Mathematics, United States Air Force Academy; who represented mathematicians working in academic and laboratory environments.

The workshop began with ice breakers managed with the use of Slido (<https://app.sli.do/>). This served as an opener to the discussions to follow. The responses received for our first question are illustrated in Figure 1.

Following the ice breakers and an initial set of demographic questions about the participants to find out their career levels and parenthood stages, the focus moved to the panelists; the moderator posed a number of questions allowing the panelists to introduce themselves and share their experiences and wisdom as mathematicians navigating parenthood.

The panel questions served as a segue to group discussions, where participants talked in breakout sessions and were invited to share their thoughts anonymously using Google Jamboard sticky notes (<https://jamboard.google.com/>), such as the sample of responses illustrated in Figure 2.

Motivated by the wealth of advice that the panelists and workshop participants shared, we boiled down the ideas into manageable, actionable items that parents and parents-to-be can do now as individuals and we propose recommendations to departments and conference organizers. We note that since the majority of the workshop participants were faculty at academic institutions, the items discussed below are predominantly framed within the academic setting.

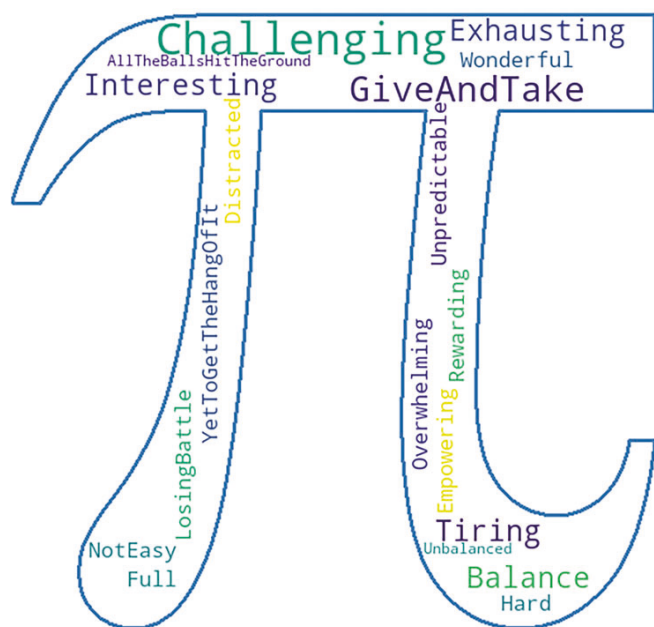


Figure 1. Answers received from participants when asked the question “In one word (phrase), how would you describe your experience juggling career and home life?” Word cloud recreated with Python module *wordcloud* [Mue18].

Things You Can Do Now as an Individual

During the workshop, we sought to collectively brainstorm ideas that individuals could use “out of the box” as mathematicians navigating parenthood. Here we summarize tips from our panel discussion and breakout sessions.



Figure 2. A subset of suggestions we received when we asked, “It’s your first semester back from leave: what are strategies to stay productive this semester?”

Calendaring

Whether you choose to use a physical planner or virtual calendar, using these tools effectively is a critical step in setting yourself up for success. Depending on the stage of parenthood you are in, for example whether you have a newborn at home or you are back in the office with your child(ren) in childcare or school, you will need varying degrees of flexibility built into your calendaring system. In particular, during the infant stage, give yourself a lot of grace and set realistic expectations. No two babies are alike, for birthing parents no two postpartum periods are alike, and as a result no two parents will have the same ability to be productive during this physically demanding stage of parenthood.

A successful calendar will include both work and home-life activities, and will include realistic amounts of time for travel between these various activities. This can help you limit working hours and prevent yourself from over-committing. For those working hours, you can now create a to-do list with deadlines and allocate those to-dos to blocks of time in your calendar accordingly. Don't forget to reserve time for lunch and pumping/breastfeeding if you are a lactating mother and set your public calendars to *unavailable* during pumping time. Scheduling all of your to-dos has many benefits, including (1) protecting your time and helping you to say "no" to things when the time isn't available (if it's something you really want to do, then something else from the calendar has to go), (2) forces you to focus on getting tasks done rather than perfected, and (3) reduces the overwhelming feeling of an extensive to-do list.

Planning

Warning: We note that the topic of planning when to have a family is a highly sensitive one and that there is content in this section that may be triggering for some readers.

As highly driven and detail-oriented people, it is tempting for mathematicians to want to plan everything out, and as a result, a common question that graduate students and early career individuals have is: *When is the right time to start a family?* This is a difficult question that does not have one right answer. Thus, you may have heard an array of advice on this matter: the best time is when you are tenured, during graduate school, or once you have "established" yourself as an X, Y, Z. The truth is that the road to parenthood does not always go as planned. We don't have much, or any, control over our fertility, pregnancy loss, or the adoption process, and not everyone doling advice has the experience to keep these factors in mind. So, the short answer is that *there is no wrong time*. Instead, we believe that the focus should be on what we can do to make it work whenever we do grow our families. One workshop participant said it perfectly, "You can start parenthood in your less-than-ideal circumstances and it will be okay."

One tactic is to look ahead at major milestones that you would like to achieve in your career and along what

timeline. From there, you can create your ideal scenario for when you want to introduce new humans to your crew. The challenging next step is to ask yourself: *What if things don't go according to plan, am I willing to pursue my ideal plan even if it doesn't work out, or would I prefer to relax my ideal scenario as a contingency?* If you choose the latter, the next task is to think about what support system you can establish if the timing of a new arrival is incongruent with career expectations. Many mathematicians often do not have family members nearby, but there are other ways to create a support structure and to organize your workload leading up to the arrival of a new child to change an inconvenient situation into a manageable one.

Time Management

The "right" work-life balance will be different for every individual, but it is important to think about what will work best so that you are satisfied with your work and personal life. Be proactive in the time limits that you set—for both raising children and doing research: it is the quality of time and not the quantity that is most important. That said, there are some concrete ways to carve out more time for the things most important to you.

Before a new arrival to your family, consider whether you can pare down projects to those you're most passionate about, or push one of them to a stage that doesn't require as much brain-power; for some, this might be the writing stage, for others, this may be creating figures—something that you can more easily do when you're a sleep-deprived parent but still want to make some progress. Take detailed notes on where you left off with a project to make the transition back to work easier. If you work on collaborative projects, remember that even just talking about research ideas is productive and you can always contribute more after you are back to work full-time.

If you already have children, consider freeing time to do more of what you love by making room in your budget to hire someone for the household work that you don't love. This could look like a biweekly cleaning service or someone to take care of the after-dinner cleanup and lunch-making a couple nights a week. If this isn't a financially viable option, look to your community, whether it's family, friends, or church members, to give a helping hand from time-to-time. If you know other parents, you can offer to trade babysitting duties, for example.

Perhaps most importantly, remember to be flexible and allow yourself to tweak your strategies as life changes and as you learn what works for your family and what doesn't. Seek out a community of other parents, whether through local parents' groups or talking with colleagues, and harness the wisdom of those that have been through it before.

Proposed Recommendations to Departments

The workshop generated many actionable items that department heads, working in conjunction with expectant

and current parents, could champion, encourage, and/or implement, in line with their current departmental policies. These changes, implemented with departmental members informed and onboard, could be impactful and yield large beneficial outcomes to both the department as a whole and on an individual level.

Colloquium and Departmental Meeting Times

A change that could greatly improve faculty and student participation is to move weekly-repeating colloquia and seminars away from 4–6 pm to avoid childcare pickup deadlines. Keep department meetings strictly within the pre-planned time and do not allow them to go late. Utilization of Zoom options could be an alternative way out, especially when the proper boundaries have been put in place when dealing with topics and voting issues on sensitive issues and tenure decisions. If social events are scheduled, be mindful of whether the time and/or location may exclude parents. If so, consider changing the venue or date or have multiple events to build community within the department.

Clear and Accessible Parental Leave and Accommodation Baseline Policy

Our panelists and workshop participants discussed many ways that their department heads made accommodations for their teaching responsibilities while on parental leave. Since the overall strategy was to work on a case-by-case basis, we recommend that a standard baseline parental/sick leave policy is onboarded in the faculty and graduate student handbooks, so that everyone is informed and less time is spent reinventing the wheel. Initiating discussions and writing down expectations (in relation to teaching, service, and research), even if some details remain vague, will allow for more consistent accommodations among department members as well as more understanding of expected faculty and student contributions while they are on leave. This baseline policy should also guide parents in balancing older childcare and work expectations, as parents remain parents in a hands-on capacity from newborns through college-age kids. Teenagers come with their own physical and mental health challenges, especially exacerbated by the COVID-19 pandemic. While we recommend a clear baseline policy, individual parental duty scenarios will differ and so some flexibility allowance should be built into the baseline policy.

Example Baseline Policies: Some larger research institutions implement policies at the college level, including “Modified Duties” in which any expectant parent (mother or father and through birth or adoption) may take a one-semester course release within one year of the arrival of the child and “Course Banking” to free-up teaching responsibilities in a later semester. These policies often require a written statement to the college of what you expect to accomplish during the reduced teaching semester with

regards to research and service. This is where a department head can play an important role in outlining realistic expectations. These statements should not over-commit the expectant parent and include contingencies for unanticipated events: pregnancy complications, difficult recoveries, postpartum depression, etc.

Service Expectations

Department heads should be open to requests for more flexible service responsibilities. Serving on a committee that meets weekly and has tight deadlines may not be a realistic commitment for parents in particular stages of parenthood, but they may still be able to contribute to the service mission with tasks that can be completed on the individual’s schedule.

Proposed Recommendations to Conference Organizers

The COVID-19 pandemic upended how we previously attended conferences, but one promising side effect is that virtual or hybrid conferences can allow for increased participation from individuals for whom it may be difficult to travel. For example, healthcare providers recommend that pregnant persons in their third trimester do not travel far from home, so pre-COVID-19, invitations to speak at distant conferences needed to be declined. Likewise, traveling during the postpartum stage or with a newborn is often unrealistic, and even with teenagers, traveling may be challenging if the child cannot be left home alone and childcare/babysitting options are limited. However, by giving the opportunity to speak remotely, conference organizers can be more inclusive and increase participation of their research community members.

For in-person portions of conferences, we suggest adopting child care policies such as those outlined in the recent article [Cal18] or the Canadian Mathematical Society’s Meetings Child Care Policy (<https://cms.math.ca/about-the-cms/governance/standing-policies/>).

We recommend that positive actions in relation to parental leave accommodations be a specific actionable training/discussion item at each AMS Department Chairs Workshop during the annual Joint Mathematics Meetings.

Parting Thoughts

The workshop participants had the following advice for parents and parents-to-be on how to approach accommodations and make changes to policy in your own departments: (1) Most chairs aren’t trained in these situations. Work with them. (2) Learn what the culture is with the chair, dean, and the provost. (3) Try to understand where the administrator is coming from, so that you can better frame your requests. Communicate clearly and as early as possible the situation at hand. (4) Bring a reasonable workable solution that you have thought through and that is in line with departmental and university policies to

your department head and administration; they may be more willing to listen. Have an idea of how you want the problem answered. (5) Don't assume you know what the answer will be if you ask for an accommodation. Allow the process to go through. Your request may be granted. (6) Be a champion for change by bringing up possible solutions to your Faculty Senate.

Parenthood is an ever-evolving beautiful and challenging part of life for many people in the mathematics workforce. The measures described above at the individual and administrative levels will ultimately help to create happier and healthier employees who can make more fruitful contributions to their fields. While there is a lot we can do to help ourselves as individuals, the greatest progress will be seen when we can shift policies towards creating a supportive environment that all employees can thrive in.

Additional Resources

During our discussions, participants shared various communities and program opportunities that parents may find useful:

The National Science Foundation's *Career-Life Balance Initiative* (<https://www.nsf.gov/career-life-balance/>) includes the opportunity to obtain supplemental funding for NSF grants to support research during PI and postdoctoral fellows' parental leave.

There are established online communities for parents in mathematics such as the *Math Mamas* Facebook Group (<https://www.facebook.com/groups/1689500051325804/>), members of which also edited the Math Mamas AMS Blog (<https://blogs.ams.org/mathmamas/>, retired in 2021 but the blog posts are still available). A Slack community *New PI Slack* (<https://newpislack.wordpress.com>) was created in 2016 for pre-tenure Assistant Professors to "help tackle common challenges" and includes a channel for parenting. *Mothers in Science* (<https://www.mothersinscience.com>) is an international nonprofit organization that is working toward work-place equity and inclusion of parents and caregivers in science, technology, engineering, mathematics, and medicine.

References

- [Cal18] Rebecca M. Calisi, *How to tackle the childcare-conference conundrum*, Proc. Natl. Acad. Sci. U.S.A. **115** (2018), no. 12, 2845–2849.
- [Mue18] Andreas Mueller, wordcloud (2018), https://github.com/amueller/word_cloud.



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