



SEPTEMBER 2024, No 3

From the editors' desk



Welcome back to the third edition of the CARINAS newsletter! We had *started this journey* with three Indian women researchers across three academic generations in the first newsletter and we heard from senior women in Astrophysics from around the world in our second newsletter. We are back with exciting news from the younger generation of Indian early-career women researchers in this edition! What are the science questions that keep this new generation awake? How did they come into Astrophysics? What was their inspiration? What motivates them today? How difficult were the job hunts? We will know about it all in this third edition!

We begin with **Prof. Manoneeta Chakraborty** recounting her journey of becoming an astrophysicist. We then include our engaging conversation with **Prof. Debarati Chatterjee** in which she provides us insights into her science and thoughts on life. We have added **survey research** on the experiences of recently hired female faculty members. And finally, our in-house humor columnist **Dr. Jestress** is back with her wickedly crafted world news! Happy reading!

My journey in academia

by PROF. MANONEETA CHAKRABORTY

– Assistant Professor, Indian Institute of Technology Indore

From an early age, I have always been enthralled by the thrill of discovery and devoured tales of scientific breakthroughs. As a student, I became interested in physics, especially astronomy, and therefore was keen to pursue a career that lets one play around with the questions and ideas regarding the cosmos and its constituents. It became evident from my school days that a career in research, particularly in physics, was my calling. Though I came from a family where I belonged to the first generation pursuing a research-oriented career, **my family was extremely supportive of the choice of an academic path for my sister and me**, which gave me an additional impetus.



This journey took me to one of the best places of learning that I have ever had the privilege to be, my undergraduate (Bachelor of Science in Physics for 3 years) college - Presidency College. However, a surprise awaited me on the first day, as from an all-girls school, I landed in a class where there were only a handful (~ 5) of female students out of a class of 30–35. Despite this, my time at Presidency Col-

lege was among the most enriching periods of my life, learning new concepts and, more importantly, getting trained in the scientific method and the analytical approach. **I often learned the most through the intense and stimulating discussions with my classmates and teachers outside of the class.**

During my Integrated PhD (MS and PhD) at the Tata Institute of Fundamental Research (TIFR), I got my introduction to the dynamic world of scientific research. Despite the stark gender imbalance in my batch here as well, navigating through the coursework and projects equipped me with valuable skills: **working effectively in collaboration, managing deadlines, solving unfamiliar problems, and multitasking proficiently.** I still remember the long nights I spent with my friends solving the assignments and the exhilarating feeling after finally completing them at the crack of dawn. Through the projects I did there, I got exposed to the field of compact objects and high-energy astrophysics, which completely captivated me. To date, I have continued trying to solve the mystery of these enigmatic objects.

During my PhD, I worked on understanding the characteristics of thermonuclear explosions that occur on the surface of neutron stars as they accumulate matter from nearby companion stars. These flares, being surface phenomena, offer great potential to probe the physics of strong gravity and ultradense supranuclear matter. My research investigated how the matter accumulation rate affects the triggering of the thermonuclear flares and the

spreading of the resultant hot ash.

Transitioning to Sabanci University for my postdoctoral research, I had the opportunity to interact with a vibrant community of researchers from various nations, including my supervisor and my collaborators. Here, **I expanded my exploration of the domain of compact objects** as I proceeded to investigate the ultra magnetically powered neutron stars - magnetars. I examined how the superstrong magnetic fields within the magnetars can affect the cracking of the magnetar crust and the reorientation of the twisted magnetic field, resulting in one of the most high-energetic astrophysical events observed.

“ *Young women researchers must get their ideas and voices heard, which I have found during my professional life to be not always smooth sailing.* ”

– Manoneeta Chakraborty

Subsequently, I joined the Department of Astronomy, Astrophysics and Space Engineering (then Centre of Astronomy) at the Indian Institute of Technology Indore (IIT Indore). **Till a year ago, I was the only female faculty member in the department.** However, here, I had the privilege to contribute towards developing a new department along with my colleagues, mostly early career researchers, which was an incredibly enlightening experience. I discovered that a plethora of skills are required to set up new research and academic laboratories, develop curriculum, teach interdisciplinary subjects, and take care of the various administrative responsibilities of a faculty member. This training improved my capabilities and aided me in establishing myself as an independent researcher. Furthermore, I have worked with several PhD, postgraduate, and undergraduate students as their supervisor. These bright, passionate young minds brought a lot of diverse ideas, and the discussions with them were often the most exciting parts of my day. I learned a lot from these students, in both academic and technical aspects.

I started the compact object astrophysics research group at IIT Indore, focusing on the multi-wavelength study of black holes, neutron stars, and pulsars using various national and international telescopes. With the recent gravitational wave and black hole imaging results being revealed, we need to put stronger constraints on the accretion mechanism and interplay of the radiation and viscous instabilities in the disk. For this goal, **we investigate broadband emission physics and variability properties of the neutron star and black hole sources using data from state-of-the-art multi-wavelength missions.** Our group also utilizes various ground-based radio astronomy facilities to conduct in-depth investigations of the pulsar magnetosphere and to characterize the systematic effects influencing the potential of pulsars as cosmic clocks. We leverage high-time-resolution wideband studies from pointed and large-scale survey observations to

probe the dynamic pulsar magnetosphere, the intricacies of the pulsar emission beam, and the transient phenomena like the fast radio burst (FRB).

I have found this entire journey inspiring, rewarding, frustrating, challenging, and often all at the same time! In short, it has been quite fun and anything but boring! The recent years have been marked by numerous groundbreaking discoveries and the emergence of unprecedented facilities like LIGO, XPOSat, etc., that are opening new windows into the universe. For me, it is an exciting time to expand my horizons and imbibe new techniques and skills. I also hope that young researchers, including people from various backgrounds and groups, will come forward to join these efforts, ensuring the enrichment of the field by a more diverse and inclusive population. Young women researchers must get their ideas and voices heard, which I have found during my professional life to be not always smooth sailing. Increased diversity in the scientific community is crucial to change this landscape. In this regard, **the endeavors of the current generation of women scientists and students, including those at CARINAS, give me great hope for the future.**

Conversation with a scientist:

Prof. Debarati Chatterjee, Associate Professor, IUCAA

by AASHANA TRIPATHI[‡], MANAMI ROY[†], & PRAKRITI PALCHOUDHURY^{*}

– PhD & Postdocs, [‡]...Germany[†]The Ohio State University, USA ^{*}University of Oxford, UK

Climbing and hiking are the outdoor activities that Prof. Debarati Chatterjee enjoys the most when she is not actively thinking of neutron stars (or is she?). She often connects with other scientists while hiking in the most beautiful and scenic locations worldwide. She chirped enthusiastically about the Himalayas, Alps, and the hills around Pune and sported her T-shirt with “Everest” on it. She chatted with us candidly about her science, trials, and tribulations in becoming an astrophysicist and the current experiences of leading a research group comprising 6 PhD students at IUCAA, Pune.

AT, MR & PPC: Let’s start with what motivated you to get into science, especially astrophysics, and how the journey started. At what point did you decide to pursue a career in astrophysics, specifically gravitational waves?



DC: I was inspired by my parents as both were from a science background. My father was a chemical engineer and my mother studied Chemistry. A source of motivation since childhood came from watching documentaries on BBC, such as Horizon or Sir David Attenborough’s Life on Earth, or programs on Discovery and Nat-Geo channels. I grew up in a place called Hal-

dia which was a port town with hardly any light pollution at that time. **I was amazed by the night sky** that I could see there. I remember many astronomical events, e.g., the total solar eclipse and meteor showers. I often went up on the terrace to watch shooting stars or follow meteor showers. However, to be attracted to a subject is one thing but to pursue it is a different journey. During my high school days, **a turning point to pursue astrophysics was when I attended a program about black holes at Birla Planetarium, Kolkata.** I was deeply impressed by how the researchers did a great job of explaining complex concepts. By the time, I reached college-level studies, I realized that physics is a very broad topic that opens up a career path to many different subjects including astrophysics. So I studied physics for my bachelor's and master's degrees. During my undergrad, I went to a summer school at the Indian Institute of Astrophysics with a naive mindset about the academic world. But during my visit, I realized that academia was great fun. I could work at any crazy hour, and I was free to travel. I did a solo trip to Vainu Bappu Observatory when I was 19 and I loved it.

I went for a PhD at the Saha Institute of Nuclear Physics (SINP). There were not many avenues to get into astrophysics at that time in Kolkata. My PhD supervisor told me there was an exciting opportunity to work in theoretical astrophysics, particularly neutron stars and gravitational waves. I enjoyed working on this. During my Masters, I attended a workshop on Astrosat, that exposed me to neutron stars. This workshop was held at TIFR, and some of the biggest names in Astrophysics at that time, Prof. Dipankar Bhattacharya and Prof. Pranab Ghosh were all teaching in this workshop. **I remember being completely fascinated by neutron stars again** and how complicated they are and how beautiful they are. So I decided to continue my work on this. For many years gravitational waves remained undetected. So several of my friends and colleagues who were working in this field were very frustrated because a lot of fund cuts happened. But the entire scenario went for a toss in 2015. The first discovery came, and now it has become the forefront of discovery. So I'm really happy that I could get into this field. So, that's the summary of many experiences that led me here.

AT, MR & PPC: Can you tell us a bit more about your research and how it evolved from PhD to now?

DC: Sure! Since SINP was a nuclear physics institute, the main motivation was to study the properties of dense nuclear matter, how it behaves, and how the unknown composition of neutron stars can influence gravitational wave emission. This was the topic of my theoretical Astrophysics project. The basic idea is that **neutron stars are very dense, compact objects.** They are almost like masses of one to two times that of the sun within a very small radius of only about 10 km. So this is **like an astrophysical laboratory, which allows us to study matter, which is way beyond the current capacity of any nuclear labo-**

ratory or any particle accelerator. The idea is that we have to build theoretical models that take into account all the complexities of dense matter and having a large excess of neutrons over protons and very low temperatures. Also, **neutron stars have very extreme properties, like ultra-strong magnetic fields and rapid rotation and translation.** So everything has to be incorporated into these theoretical models.

In my research group at IUCAA, we build these analytical models and sometimes also evolve them in either static or dynamic simulations, which can then be compared to observations. We don't directly work with observational data, but from the data, we can get some constraints on the models. From that, we try to understand the properties of matter inside these neutron stars. Neutron stars and black holes can also be gravitational wave sources. A neutron star when subject to earthquake-like perturbations or if they undergo collisions, may emit gravitational waves. These gravitational waves will carry signatures of their internal composition. This is what we try to model.

The journey was not smooth after my PhD. The opportunities don't come so easily. So **I had to switch back and forth between many topics at many different places in many different languages.** There were a lot of challenges. During my PhD, I was a DAAD fellow and had some exchange opportunities with Germany. After PhD, I got an offer for the Alexander von Humboldt Fellowship at the University of Heidelberg. I did my first postdoc at the Institute for Theoretical Physics. But in 2010 gravitational waves were not an exciting field as no direct detections had yet happened. Many people were speculative and critical about whether gravitational waves would ever be found....

AT, MR & PPC: This might have affected the postdoctoral positions at that time, right? In that scenario, how did you motivate yourself or did you change your path?

DC: Yes, exactly, there was a reduction in postdoctoral positions because people thought that gravitational waves may just be a theoretical idea. I did not completely abandon it; I kept it in my head. There was a big incentive at that time to work on very massive neutron stars, because there were a series of discoveries of it, which would put stringent constraints on matter contained inside neutron stars. At that time, scientists were speculating that strange matter, seen in particle accelerators, may not appear in the core of heavy neutron stars. My then supervisor and I showed that this is not necessarily the case and that they may not be ruled out. But it tells us a little bit about the properties and the repulsion of these particles. This work was very highly cited, you can say, and we had over 400 citations. **These two papers became pioneers in opening up a field** where after that many, many works have gone on into these kinds of studies. **But after this, I did not find another position in the same field.** For some time, I moved to the Frankfurt Institute of Advanced Studies, where I was doing something completely

different. That was a high-performance computing center and I had started doing molecular dynamics simulations of the crust. It involved parallel programming and GPU computing, and so on. The idea was to see if you have a multi-component plasma, you can do the evolution and trace how its properties will behave.

AT, MR & PPC: How do you connect molecular dynamics to neutron star interior?

DC: The crust and the core are very different types of materials. The crust is made of nuclei, so it's non-homogeneous, whereas the core is very homogeneous. This goes through a complex phase transformation. There have been very few studies that have traced this. I started with a lattice of nuclei. It was a 13-component plasma, and then it started evolving when I increased the temperatures or the pressure. And then I could trace how the composition is changing. From this, we could say something about its properties, its viscosity, the thermal conductivity of an interface, and many other properties like that. So good thing about my career was that **neutron stars are so complex and multidisciplinary that I could go from one thing to the other** without losing connection with neutron stars. Though it was completely different from what I was doing before I learned a lot of things in the process.

However, it was a nine-month supported guest researcher position, and at the end of it, **I was told that there was no possibility of an extension because there was no funding.** At this time, I had an offer from Paris Observatory, which meant that all the effort I had put into learning German had gone in vain and I would have to start all over again. I was of course demotivated for a while because I had friends almost like family in Germany, and I had to go away and start my life afresh. I ended up living for seven years in France and I loved it. But it was very challenging in the beginning because hardly anybody spoke any English in France. I had to learn French as fast as I could. Also, **I had to pick up a completely different topic again** because, in the Paris observatory where I got a position, it was in relativity and compact object group. They were doing GRMHD simulations. I worked for a couple of years. And **at the end of this, again, I was looking for positions in different places.** There were several offers in Europe but I didn't want to go and start all over again. So I was trying to find something in Germany or France.

“... the good thing is that I was never supported by anyone. ... I did almost everything on my own. So I could independently set up my group and now I have a big group of six PhD students and one postdoc.

”

– Debarati Chatterjee

At that time, I got an offer from Centre National de

la Recherche Scientifique (CNRS) for a three-year fixed position. It was something that is not exactly a postdoc, but it's called a fixed position fixed-term contract. Though three years is a good timescale, I'll tell you why it often doesn't work. They expect you to come set up a group, but you cannot take your students because you have to do habilitation to get students. I was working with the group of my supervisor. I was happy to have project students, both undergrad and postgrad. I had set up the group, I wrote the codes, and I mentored these students. But as they started publishing their results, I had to leave because the position was over...

AT, MR & PPC: ...it's like, you're putting effort, but not for your team. Wasn't that very annoying?

DC: Yeah, very. Right now **they continue to work with my codes, and I don't get cited, or even acknowledged** or my name is not on the author list. But yeah, the good thing that came out of it is that I worked mostly in nuclear physics and theoretical astrophysics and learned some other numerical modeling techniques. Also, working with so many students gave me an excellent opportunity to learn how to mentor students, and how to think of new projects and ideas that can be publishable. This was never thought of during my other postdocs. Well, long story short, all of this added up when I joined IUCAA.

In 2019, when I was still in France I had some issues at home, my mother was hospitalized, and I was looking for a position in India. I applied to IUCAA, TIFR, and IIA, the first offer came from IUCAA and I started in 2020, just one month before lockdown. As you can imagine I joined, went through the medical tests, signed my contract, and hell broke loose. For one year, I couldn't even meet my students face to face or I couldn't interact with anyone. Challenges after challenges. What I can tell you is that it never comes easy, but somehow it all added up, like, the good thing is that I was never handheld by anyone. Although I was helped by friends and colleagues, I was never mentored by anyone as such. I did almost everything on my own. So I could independently set up my group and now I have a big group of six PhD students, master students, and one postdoc. And all of them work in all these different fields that I've worked in. So one is doing simulation, one is doing particle physics, another is doing nuclear physics. So it all added up somehow.

Also, gravitational waves somehow worked out as a miracle. Right now I'm part of several collaborations, including the LIGO scientific collaboration and the Einstein Telescope collaboration. All of them require people who can model neutron stars, the many aspects of it, and its effect on gravitational waves. So I would say I'm very lucky that all of this complementary expertise came together to my advantage.

AT, MR & PPC: So how was your experience about getting a job in India? Was it easy or difficult?

DC: I would say when I left India just after my PhD, **I regret that I did not continue to keep my network in India.** I was not sure if I would come back. Due to

that, I never had a proper network established back in India so **when I came back, it was hard to rebuild those connections**. Even now, fewer people know me in India, most people who know me are in the US and UK, or Europe. Also, a lockdown happened, So, I was not able to go to conferences and so on.

But, I would say it situation got better because when I left after my PhD, there were not many places I could apply for as a theoretical astrophysicist. But now, in addition to old institutes like IUCAA, TIFR, and IIA, there are many other Institutes that are IITs and IISERs. Also, the universities are working for example, IUCAA has many associates at many universities, where professors are working in collaboration with researchers. Also, I think nowadays there are many activities in hybrid mode, and a lot of online lectures, and YouTube lectures are available. So, I think **if somebody wants to work, it is possible to work from anywhere**. Those days are gone when you are in a small town and you don't know what is going on in the world of research.

AT, MR & PPC: So, what are the points you would say one should keep in mind while applying for jobs in India? What are the differences between Indian academia and academia in Europe, the UK, or the USA? Is it more difficult outside?

DC: **India is more supportive in terms of mobility.** I remember when I was moving from one place to the other, particularly in Germany/France, there was a lot of difficulty. Finding accommodation, medical insurance, getting doctor's appointments, visa applications, not finding an appointment for an extension, etc consume us. In India, of course, this visa situation doesn't arise.

When I got stuck here as a single woman professor in IUCAA in my first year during COVID-19, I got incredible support from IUCAA. There was on-campus medical support. I was hospitalized because as soon as I moved here I had symptoms similar to COVID. They organized vaccination camps within the campus. If we ordered something, it went through security and got sanitized. It was an incredible amount of support they provided. Now, I think they have a creche for working women. And they have accommodation, a canteen facility on campus, in-house doctors etc, and many things that can save me time. So I've saved energy to focus on research. **I think this is not highlighted enough that India is excellent in providing these opportunities and support, which matters a lot if you're a woman in academia. In some other countries, women do experience more freedom but not this kind of support. There are pros and cons everywhere.** Other than that, I would say academically, I have worked in different countries, and each country has its own working style. In Germany, it was always very, very planned. France was more relaxed. **I've seen there's a very good work-life balance in Europe. Here that boundary may become fragile.** Having said that, in India, each institution has a unique style of functioning and culture of its own.

AT, MR & PPC: Did you have more male mentors or female mentors and how did you experience mentorship? You felt that you mostly worked independently. But still, if you have any comment on that?

DC: Well, my interaction with my PhD supervisor was not pleasant. It was still not the time when people would be more vocal about inconveniences. However, due to him only, I was introduced to the concept of gravitational waves. So I did a successful PhD, had 10 publications, and was awarded the Excellence Award by DAE. I felt that my supervisor was controlling. From my socializing to networking, he was always watching over me. I was mentally disturbed at the time when I finished my PhD. But I got lucky to have a very supportive first post-doc supervisor. He was giving me full freedom to do science my way but due to old habits, I went from like a prison to jumping into the sea. So, I was struggling with getting ideas off the table. There are just so few women in my work area, that it's unlikely to find a female mentor.

AT, MR & PPC: Do you like the work atmosphere in India after coming back from Europe?

DC: I was bit skeptical as I heard different stories. **I was already coming from a laboratory that was very sexist despite a good number of women researchers.** but in IUCAA, I was positively surprised. I was warmly received.

AT, MR & PPC: How do you manage work-life balance?

DC: If I don't have a proper work-life balance, I don't think I will be able to work efficiently. So I find time for things that I enjoy. It also provides me with a lot of ideas. I like interacting with people who are not from my field that's why I took responsibility as a Chair of Education and Public Outreach for the LIGO India mega-science project. Talking to people in other fields helps me understand what people understand about physics. I also enjoy trekking, dancing, and traveling.

AT, MR & PPC: Do you go for trekking regularly from Pune?

DC: Yes, I am still wearing an Everest base camp t-shirt. I was a rock climber from an early age. I used to go to the Himalayas often. Pune is also surrounded by Sahyadri mountains. All through Covid, I had been regularly trekking and continue when I have the opportunity.

AT, MR & PPC: Do you think of financial investments?

DC: Oh, I am complete disaster in that. I don't plan. I don't invest in cars or houses as I live alone. So, I enjoy being in the present and enjoying my life without major future planning. I just focus on building my skills and capabilities so that I can start all over again if I have to. I think it is not a very wise thing to advise others, but this works for me.

AT, MR & PPC: What are the challenges of starting a new group? How do you deal with your six students knowing all are different individuals? What do you think will be the best advice for that?

DC: I treat my students as my friends and as my colleagues, we go out together, we discuss together, we do group meetings, we chat, we gossip, we enjoy. I

try to not only guide them but also motivate them. Also, all of them are different so I don't try to use the same success formula for all. I am also a little harsh on them at times to make them reach their potential. I find them quite uniquely talented. I feel proud when people praise them or show interest in hiring them as future postdocs. They work on a strict timeline because if they fall behind by a few months, some other research group will publish the same in this very competitive field. **IUCAA is selective so there is a small number of students at a given time and we know them individually. I love that as sometimes I also learn a lot from the students.**

AT, MR & PPC: what would be your advice to the future generation especially to women researchers, who want to stay in academia?

DC: I don't want to bias people with my personal experiences. But if I have to, my first advice is: to build your network. No matter where you are, networking socially, and academically will help. Sometimes someone from a different field such as biology can give you ideas about something. Secondly, **be vocal about your problems, sometimes women do not speak up about their problems.** I'm glad that this network that you are building will help you do that. Sometimes sharing problems is already half-solving. Don't be demotivated. I know that it's not easy at all but you can train yourself to be persistent. Sometimes, you might not be able to find a postdoc in your field/ the person/ the group you were looking for. But often we don't know what works best for us so take it up as a challenge. Trust me, **it works out, if you're strong, and if you're motivated, it works out.**

Survey review of new faculties

by SANSKRITI DAS¹

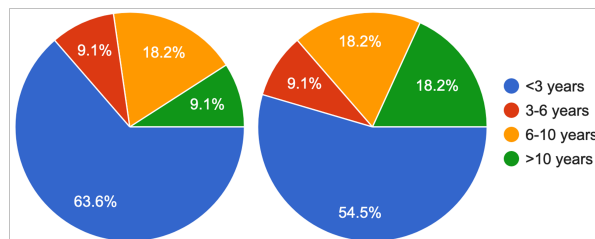
– Postdoctoral fellow, KIPAC, Stanford University, USA

The steep deterioration in the gender ratio of researchers in senior academic and policy-making positions is well known. The number of available jobs for faculties is significantly smaller compared to PhD and postdoc positions because unlike the latter, these are permanent and demanding positions. While a few people make it to the end, the hurdles do not end there despite the job security.

We crafted an **anonymous survey** for the faculty members of CARINAS to learn about their experiences/memories as newly appointed faculty as they can see the system from the inside. We do not claim it to be a complete or unbiased survey as it is limited by the number of volunteering professors within CARINAS and the relatively small number of CARINAS members compared to the whole fraternity. However, it would act as a pilot survey when we revisit this on a regular interval as our CARINAS community (hopefully) grows.

To test if the experience of new professors has evolved

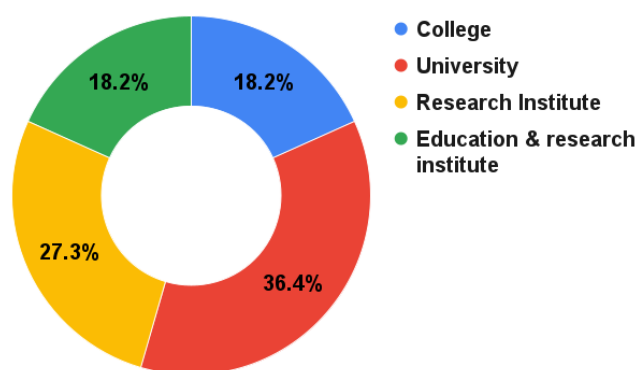
with time, we incorporate the answers from relatively senior faculties as well as those who have moved to a new institute in the middle of their careers and started afresh.



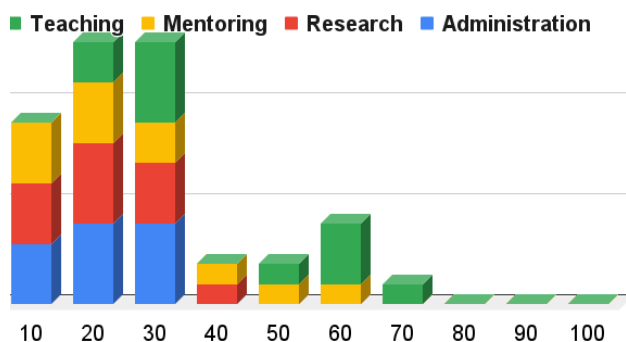
Years spent as a faculty at the current institute (left) and overall (right)

More than half of the participating faculties are new/nontenured (pie chart to the top), so most of the responses are reflective of the current situation anyway.

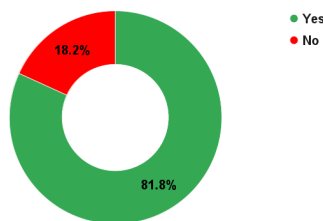
>80% of the faculties are from universities and/or research institutes, i.e., actively involved in research, with a comparable number of faculties having teaching-dominated or research-dominated profiles (pie chart to the bottom). ≈20% faculties are from teaching colleges. Thus **we cover different types of academic institutions.**



>70% faculties spend almost equal amounts of time in teaching, research, mentoring, and administration (bar chart to the bottom, the x-axis is the percentage of working hours), coercing them to juggle multiple roles with different requirements. Male professors often tend to get students faster due to the inherent biases among students in selecting supervisors. Therefore, female professors are compelled to cultivate ways of attracting students. Due to an insufficient number of female professors and the (diversity) requirement of their presence in most committees, they are assigned more administrative roles



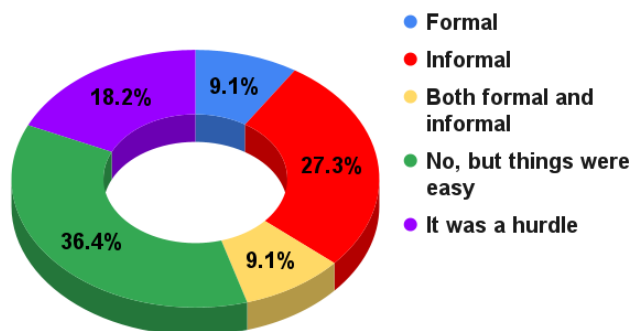
¹Many thanks to Sowkhya Shanbhog (PhD student, Scuola Normale Superiore, Pisa, Italy) for contributing to making the survey questions



Do they spend time on outreach? than their male colleagues, and new faculties are hesitant to deny. In faculty meetings, they can perceive gender biases distinctly. All these result in an additional burden. Several faculties spend more than half of their time teaching and evaluating students, giving them little scope for research. New faculty members often prepare teaching material from scratch which consumes most of their time. While **>80% faculties enjoy outreach** (pie chart to the left), they do it outside their official working hours.

Being a faculty requires excellent time management skills. What professors do matters to the department, and naturally they are held responsible. Thus the transition from a postdoc to a faculty (assuming the career path to be linear) might be abrupt for people who earlier invested most/all of their time in only research.

It is presumably harder in the case of a nontraditional career track. We asked if the professors received sufficient orientation on different parts of their job when they joined as assistant professors.

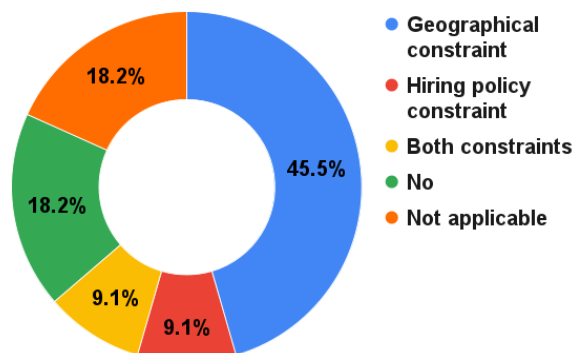


Offered support and the ease of transition

>80% of the faculties did not receive any formal orientation from the recruiting department or the institute. They had to learn things on the job. $\approx 25\text{--}30\%$ of them received informal support from their peers and colleagues, and $\approx 35\%$ could figure everything out on their own. However, the initial years were challenging for $\approx 20\%$ professors and they expressed **interest in more structured support from the institute as well as organized guidance from senior female professors**. On the other hand, everyone is not mentally prepared to have a female faculty in male-dominated institutions. Some young professors were confused as postdocs for several years by the non-academic staff in their department and people in other departments. Thus **preexisting staff needs to be gender sensitized** as well.

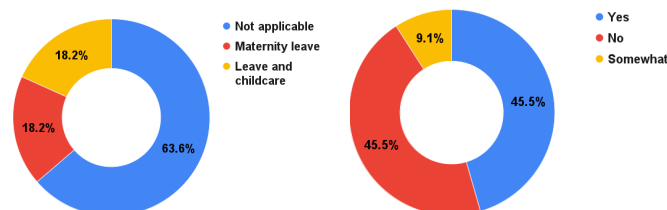
Due to our age-old social norms, the two-body problem (a dilemma for spouses relating to the difficulty of obtaining jobs at the same workplace or within a reasonable commuting distance) and other familial duties are

often accused of disproportionately affecting women.



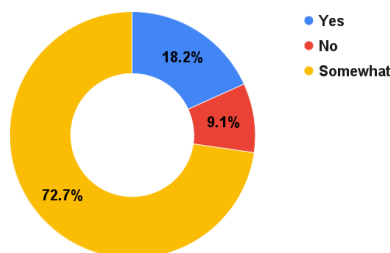
Constraint due to two-body problem

$\approx 65\%$ professors were constrained by the two-body problem while applying and/or deciding on a faculty position (pie chart to the top). Some were told to stay in a temporary visiting position and apply later (without any promises) at the place where their male spouses were offered a tenured position. While geographical constraints are unavoidable, such obstacles due to hiring policies that $\approx 20\%$ professors faced can and should be reconsidered.



Left: maternity support. Right: family responsibilities

Wherever applicable², faculties received maternity support in the form of leave and/or daytime childcare, but most of them were abroad during that time (pie chart to the top left). Because of two-body and childcare issues, some professors opted to join new institutes (that were relatively lenient due to their urgent need) at the cost of sacrificing work-life balance for building the new department in addition to standard responsibilities. For **>54% professors, other family responsibilities, e.g., eldercare, were a constraint** while applying for jobs or accepting the current job (pie chart to the top right). Despite existing constraints, some professors had to make the difficult decision of staying away from their families and were exhausted trying to manage both sides.



Do faculties have a sufficient work-life balance?

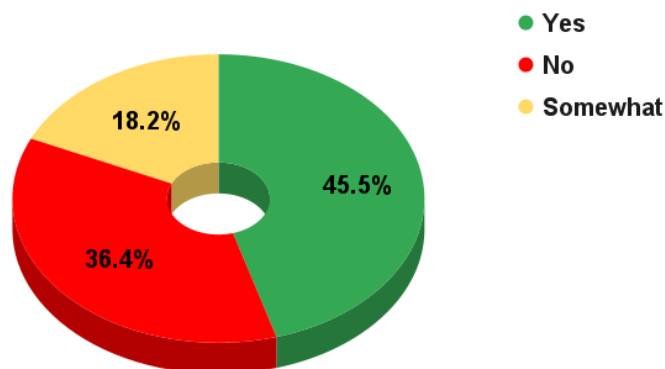
the department, the colleagues and collaborators, and so

Healthy work environments and harmony with life outside work are crucial for sustainable productivity. It is sensitive to a lot of parameters: the working culture of the nation, the institute and

²The two-body problem and maternity support were not applicable for 20% and 64% of professors, respectively. We will refrain from discussing whether their life choices/decisions were (in)directly influenced by the lack of facilities in academia.

on. While research is paramount in getting tenure, it is not factored into the work-week that is primarily invested in teaching and administration. Thus nontenured professors often have to work weekends to finish research projects. The **work-life balance** of women professionals is often hampered inordinately due to societal expectations. In our survey, $>70\%$ participants are neutral about their work-life balance, while $\approx 10\%$ professors are severely impacted.

To summarize, we asked if any of them faced gender-related discrimination as a professor.



Overall, did gender make things more difficult?

It comes as no surprise that $\approx 65\%$ of faculties think that they had to struggle more than their male counterparts to achieve their current position and to thrive at the current position.

These results are hardly correlated with the seniority, the nation of their previous employer (half of the professors were abroad before starting as a faculty), the category of their current institute, etc. While we have many light-years to go before formally resolving all these issues top-down, faculties participating in this survey recommend that a strong mentoring network of female faculties would help women navigate the job application phases, deal with sexism in the workplace, and also keep a conscious watch on in situ biases of fellow women in decision making. As a democratic forum, CARINAS will continue to play a promising role in building up this network.

Freshly baked news

Trending stories of our times³

by DR. JESTRESS⁴

Moon is coming to your doorstep, are you ready?

In an unexpected turn of events, Radha sent a series of radio signals to Earth declaring that she would never return. She intends to have more of her kind to follow her. She has set sail willingly to build a milk factory on the Moon. It is only beneficial for Earthlings to grant her an

exclusive franchise for milk supply. Over time, she further plans to raise the budget and build a sliding track between Earth and the Moon called “Milk Route” for ease of business.



WSLA award goes to theory lead of RADHA

After three consecutive winning streaks for observers, this year's Words-Speak-Louder-than-Action (WSLA) award went to a theoretical physicist who was one of the leads in RADHA (Radha's Dillema Hollers Action) task force. He had set out to solve the complicated three-body problem but realized that Radha's could just be part of Moon! Thus he mapped the original problem to the simpler two-body problem again. “With Radha's permanent residency on the Moon, everything turns out to be beautifully consistent with my theory. I'm so excited and humbled to be receiving this award!”, the jubilant awardee said.

Editorial board

Aashana Tripathi, Sanskriti Das, Prakriti Pal Choudhury, Manami Roy, Sowkhya Shanbhog

Other acknowledgements

The Milky Way photograph used for creating a woman's silhouette by Prakriti Pal Choudhury is provided by [Sangram Biswas photography](#).

³Read previous 'Freshly baked news' to follow these trending stories.

⁴This is meant for pure humor. Everything here is fictional. Apologies in advance if any individual/community/nation finds it offensive.