

# Perspectives from young scientists

Serbia's ECFA ECR  
Panel Representatives:

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University of Belgrade

**RECFA Visit to Serbia, 29 November 2024**



# Introduction

- **Context**

The survey targeted individuals primarily in high-energy physics and related fields

- **Objective**

Overview of the survey conducted to understand the challenges and support needs of early-career physicists in Serbia

- **Respondents**

PhD candidates, young researchers, and early-career scientists within approximately eight years of completing their PhD

Personal and Academic Background



Research Focus and Collaboration



Research, Recognition, and Visibility



Workplace Culture and Well-being



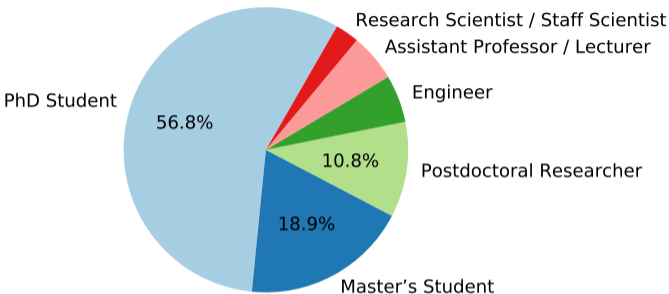
Work-Life Balance and Personal Life



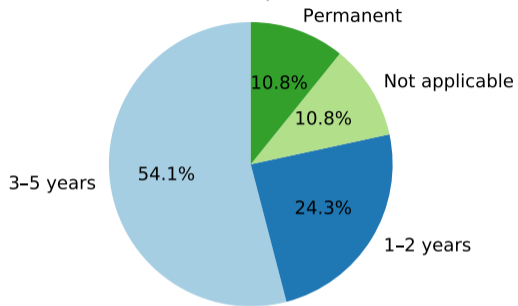
Career Prospects

# Personal and Academic Background

What is your current position? (Responses: 37)



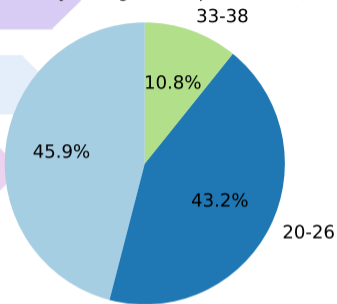
What is the duration of your current contract? (Responses: 37)



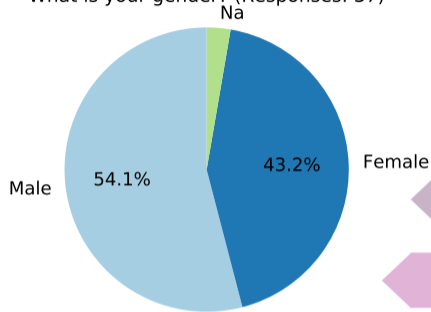
- ▶ The majority of respondents (56.8%) are PhD students.
- ▶ This is followed by Master's students and Postdoctoral Researchers. A smaller portion are Engineers or Assistant Professors/Lecturers.
- ▶ Most respondents have contract durations between 3-5 years (54.1%).

## Personal and Academic Background

What is your age? (Responses: 37)



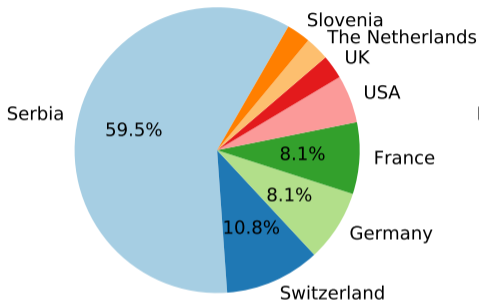
What is your gender? (Responses: 37)



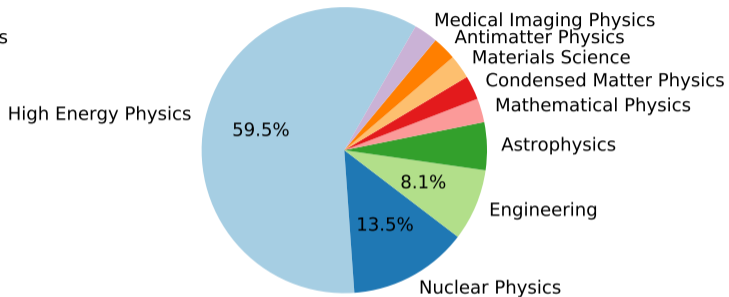
- ▶ Respondents fall mostly in the 20–26 and 27–32 age groups, reflecting early-career stages in academia.
- ▶ There is a higher proportion of male respondents (54.1%), with females making up a significant portion as well.

# Personal and Academic Background

What is your current country of residence? (Responses: 37)



What is your primary field of research? (Responses: 37)



- ▶ A majority are based in Serbia, but there is also representation from countries such as Switzerland, Germany, France, and the USA, indicating international academic mobility.
- ▶ The primary field for most respondents is High Energy Physics (59.5%), aligning with the survey's target audience. Other fields include Nuclear Physics, Engineering, and Astrophysics.

### **Background:**

- Predominantly PhD students in their 20s to early 30s
- The majority having Serbian nationality
- Almost half of them reside and work outside of Serbia

### **Contract duration:**

- The dominance of respondents (78.4%) have limited contract durations on less than 5 years.
- This highlights potential career struggles and uncertainties for young researchers.

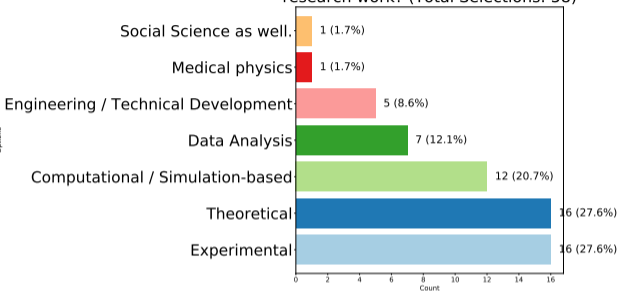
### **Interdisciplinary Engagement:**

The prevalence of High Energy Physics reflects the focus of this survey and indicates the specific interests of the respondents, though there is some interdisciplinary engagement.

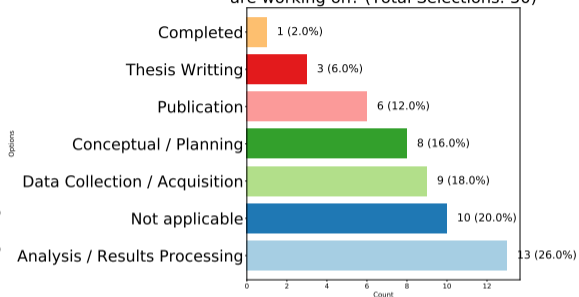


# Research Focus and Collaboration

What is the primary nature of your research work? (Total Selections: 58)



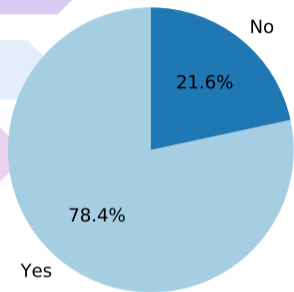
In which stage are any experiments you are working on? (Total Selections: 50)



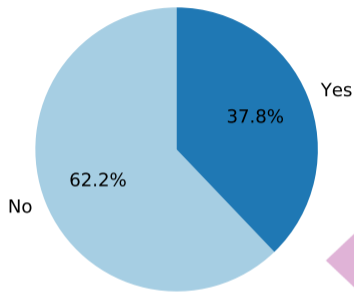
- ▶ Theoretical research (27.6%) and Experimental research (27.6%) are the primary focuses, followed by Computational/Simulation-based work (20.7%).
- ▶ The largest group of respondents (26%) are engaged in Analysis/Results processing, while 20% selected "Not applicable" possibly reflecting a theoretical focus among some participants.

## Research Focus and Collaboration

Do you work in a research group? (Responses: 37)



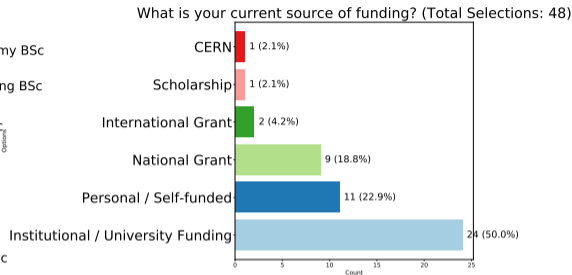
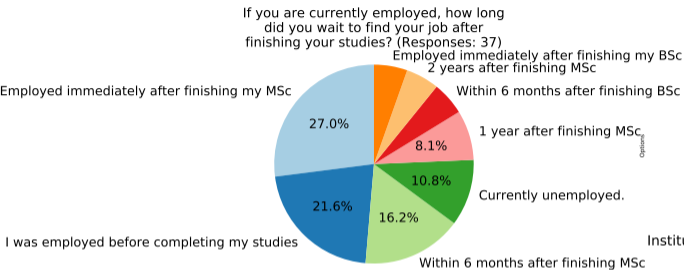
Do you work in a collaboration? (Responses: 37)



- ▶ A significant majority (78.4%) participate in research groups, while only 37.8% are involved in large-scale collaborations with external institutions.
- ▶ Among collaborations, **CMS**(25%) and **ATLAS**(18.8%) are the most cited groups, with other collaborations like CLIC, CEPC (see backup) also mentioned. This reflects involvement in major physics experiments and collaborations, primarily linked to CERN.



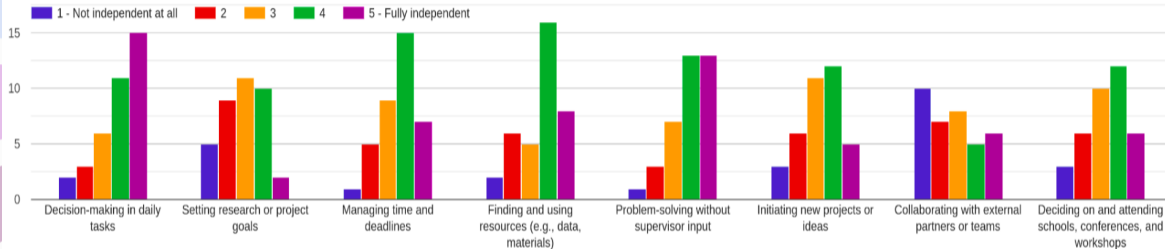
# Research Focus and Collaboration



- ▶ A variety of timelines were reported for finding employment after studies, with a sizable proportion (21.6%) employed before completing their degrees.
- ▶ The main funding sources are Institutional/University Funding (50%) and Personal/Self-funding (25%).
- ▶ National grants (18.8%) and international grants (4.2%) are less common, with minimal industry sponsorship.

## Research Focus and Collaboration

How independent are you in the following aspects of your work? (Rate each on a scale from 1 to 5, where 1 = Not independent at all (I rely entirely on my supervisor/employer), and 5 = Fully independent (I work entirely on my own))



- ▶ Independence varies across work aspects, with respondents feeling most independent in managing time and deadlines and finding and using resources.
- ▶ However, setting research or project goals and decision-making in daily tasks show a mix of independence levels, indicating that early-career researchers may have some autonomy but still rely on supervision in key areas.



### **Collaboration Opportunities:**

With high theoretical and experimental engagement, expanding inter-institutional collaborations could offer more opportunities for diverse research approaches.

### **Funding Diversification:**

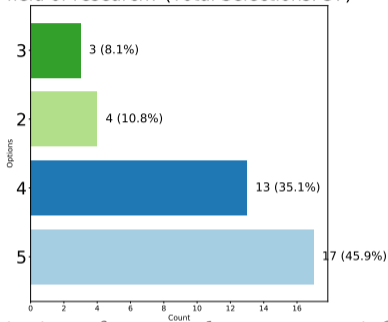
Alternative funding sources, including international and industry grants, could be explored to alleviate self-funding needs.

### **Greater Involvement in Decision-Making:**

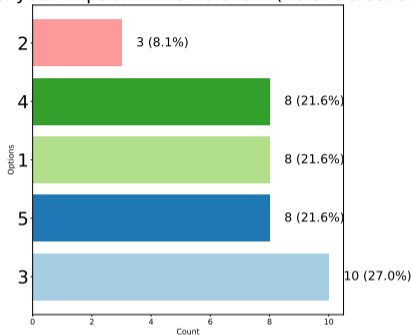
Many respondents wish to participate more actively in decision-making within their institutions..

## Research, Recognition, and Visibility

How satisfied are you with your current field of research? (Total Selections: 37)



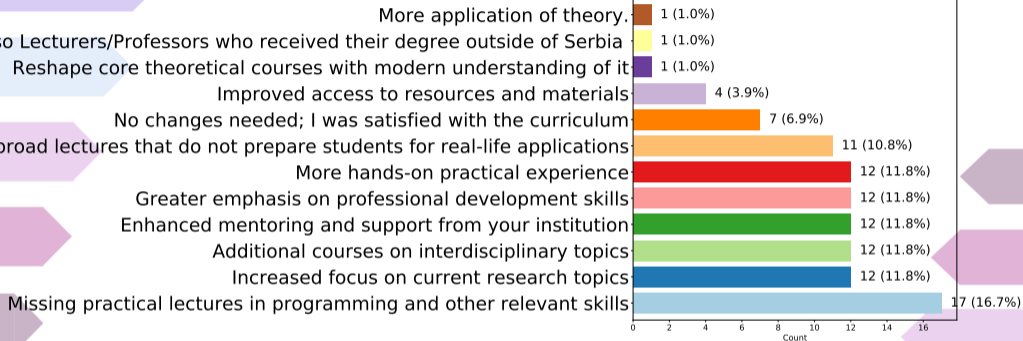
Do you feel your impact in the field is... (Total Selections: 37)



- ▶ Majority of respondents are satisfied with their current field of research, with 45.9% rating it at the highest level. However, perceived impact is more mixed, with many feeling they have a moderate (3.13) influence in the field.
- ▶ This gap between satisfaction and impact suggests that while early-career researchers are content with their chosen fields, they may still feel limited in terms of influence or contribution.

# Research, Recognition, and Visibility

What aspects of your curriculum would you like to see changed or improved? (Total Selections: 102)



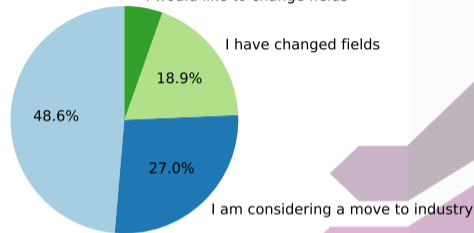
- ▶ Respondents desire improvements in hands-on experience (16.7%), a focus on current research trends (11.8%), and interdisciplinary coursework (11.8%).
- ▶ These responses indicate a strong interest in aligning educational experiences more closely with practical and cutting-edge research applications.

# Research, Recognition, and Visibility

If you would change fields, what is the primary reason? (Total Selections: 52)



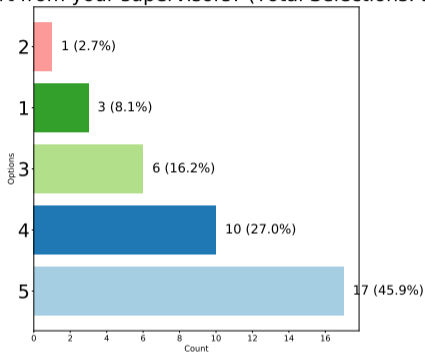
Have you changed your research field, or would you like to? (Responses: 37)



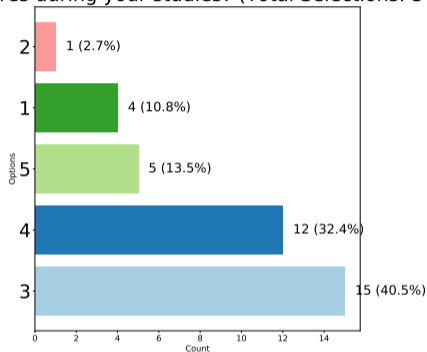
- ▶ About half (48.6%) are satisfied with their field, while others have changed fields or consider doing so, primarily for financial reasons and personal interest in a new area.
- ▶ Those contemplating a change seek better career prospects, indicating that for some, the current field may not fully meet their professional or financial needs. This is reinforced by the mixed views on impact and independence in setting research direction.

# Research, Recognition, and Visibility

How would you rate the accessibility and support from your supervisors? (Total Selections: 37)



How would you rate the quality of lectures during your studies? (Total Selections: 37)



- ▶ Supervisor accessibility received high ratings (4.0 average)
- ▶ Lecture quality was moderate (3.35 average).
- ▶ This suggests that while mentorship is generally strong, formal training could be enhanced, especially in areas like practical and interdisciplinary coursework.

# Research, Recognition, and Visibility

If you are no longer in Serbia, what were the main reasons for your move? (Total Selections: 73)



- ▶ The most common motivations for relocating abroad were better job opportunities (20.5%), advanced training (17.8%), and international collaboration (13.7%).
- ▶ This reflects a desire for improved resources and broader professional networks, which local institutions could address to better retain talent.



### **Increase Autonomy:**

Institutions could offer early-career researchers more independence in defining research goals, potentially through structured mentoring and milestone-based autonomy.

### **Expand Training:**

The demand for practical experience and interdisciplinary courses aligns with moderate satisfaction in lecture quality.

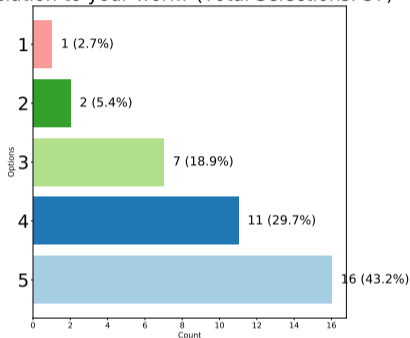
### **Broaden Recognition:**

Alternative recognition methods could provide a more accurate and motivational view of early-career impact.

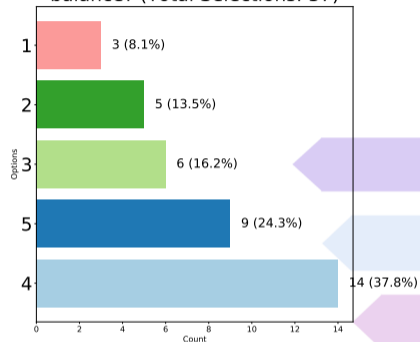


## Work-Life Balance

How would you rate your mental health in relation to your work? (Total Selections: 37)



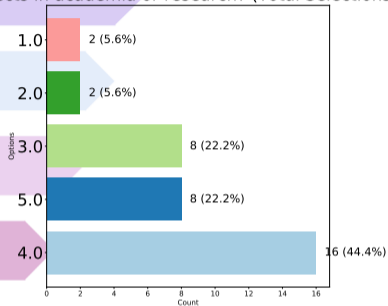
How would you rate your work-life balance? (Total Selections: 37)



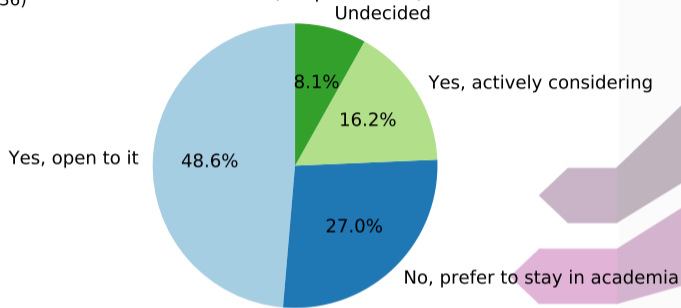
- ▶ Most respondents rated their mental health positively, with 43.2% rating it at level 5 (highest) and 29.7% at level 4.
- ▶ Majority of respondents rated their work-life balance positively, with 37.8% rating it at level 4 and 24.3% at the highest level (5).

## Career Prospects

Are you optimistic about your career prospects in academia or research? (Total Selections: 36)



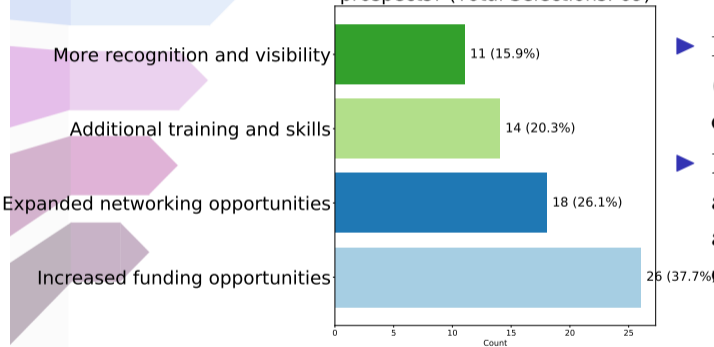
Would you consider a career outside of academia? (Responses: 37)



- ▶ The largest group (45.4%) rated their optimism about career prospects in academia at level 4, with 22.2% at the highest level (5). However, a combined 33.4% have low optimism (levels 1-3)
- ▶ 48.6% are open to careers outside academia, with an additional 16.2% actively considering a transition. Only 27% prefer to stay in academia, indicating a significant openness to alternative career paths, likely due to perceived limitations in academic career growth.

# Career Prospects

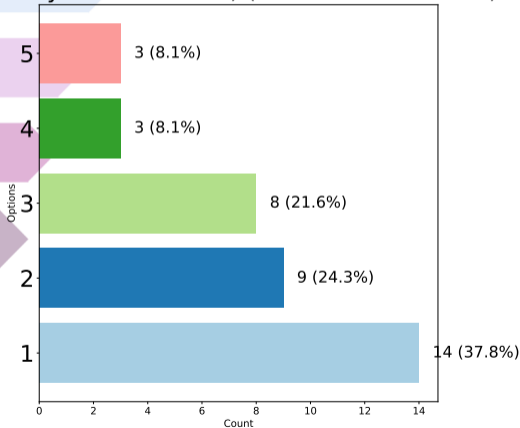
What would most improve your career prospects? (Total Selections: 69)



- ▶ Increased funding opportunities (37.7%) and expanded networking opportunities (26.1%) to improve
- ▶ Many also noting a need for additional training/skills (20.3%) and greater recognition (15.9%) could address to better retain talent.

## Career Prospects

How well-informed are you about the current strategies for advancing science in Serbia? (Rate on a scale from 1 to 5, where 1 = Not informed at all, and 5 = Very well-informed) (Total Selections: 37)



- ▶ A significant portion (37.8%) reported low awareness (Not informed at all) of strategies for advancing science in Serbia.
- ▶ Only a few respondents feel well-informed (8.1% rated 4 or 5), suggesting a need for improved communication about national strategies and developments in science.

### **Increase Autonomy:**

Better workspaces and access to resources are needed for enhanced productivity and morale.

### **Modernizing Curriculum:**

Incorporating more IT skills and practical training into the curriculum is strongly called for.

### **Enhancing Visibility:**

Popularizing science and enhancing the visibility of research achievements can improve public support.

### **Addressing Stability:**

Addressing delayed hiring processes and restrictive funding durations is crucial for stability.





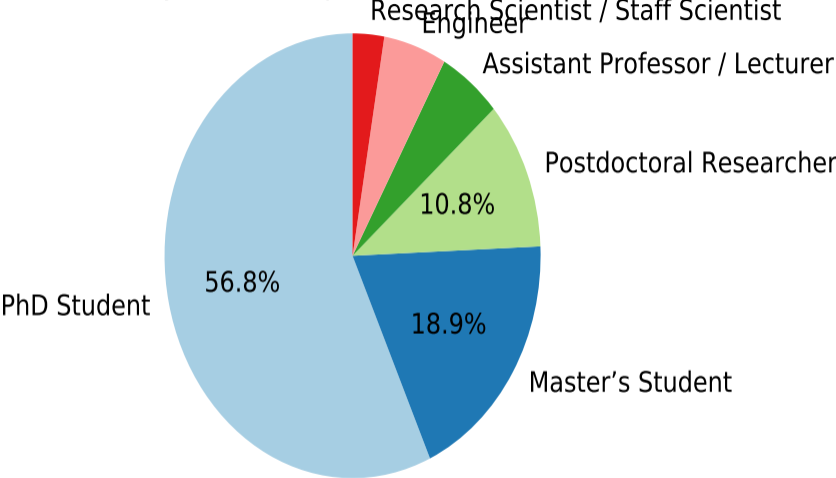
Thank you for  
your attention



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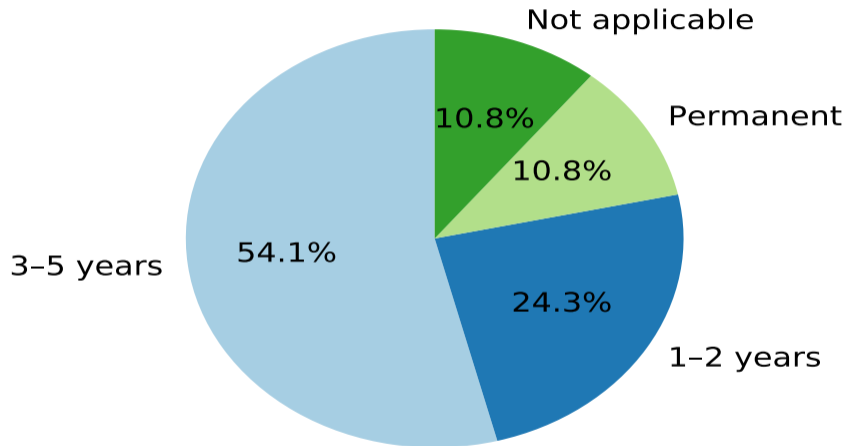


What is your current position? (Responses: 37)



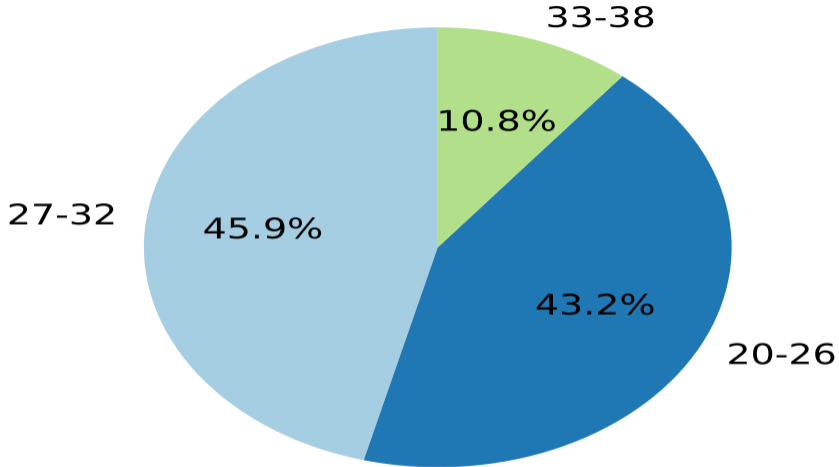
**BACKUP**

What is the duration of your current contract? (Responses: 37)



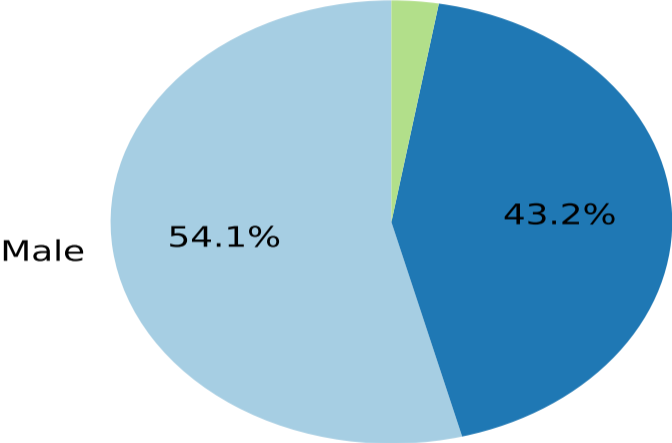
**BACKUP**

# What is your age? (Responses: 37)

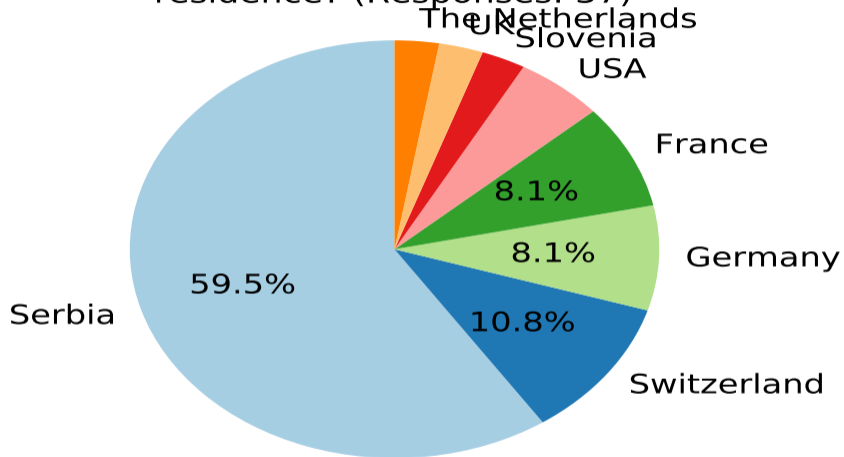


# What is your gender? (Responses: 37)

Na

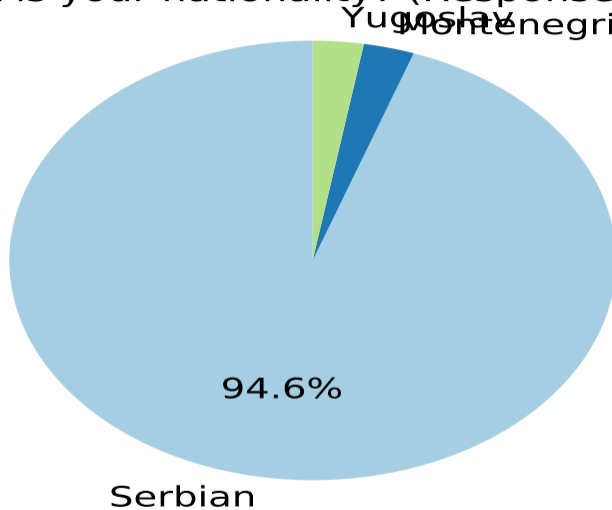


What is your current country of residence? (Responses: 37)

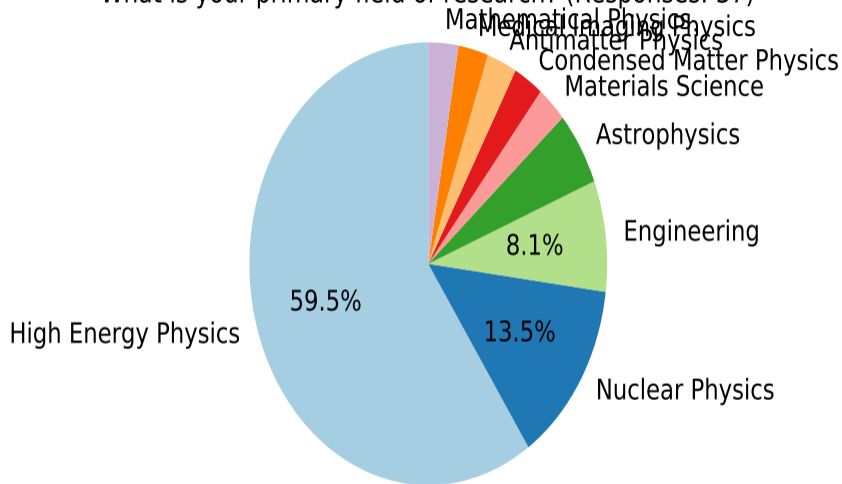


**BACKUP**

# What is your nationality? (Responses: 37)

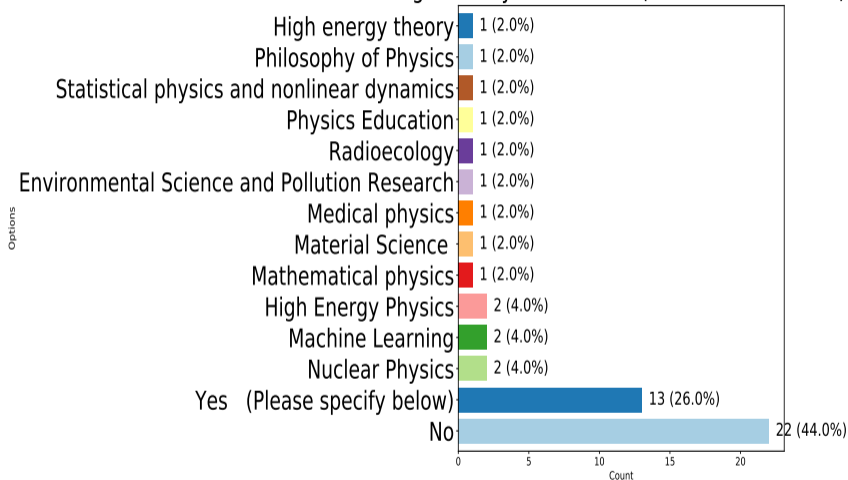


What is your primary field of research? (Responses: 37)



**BACKUP**

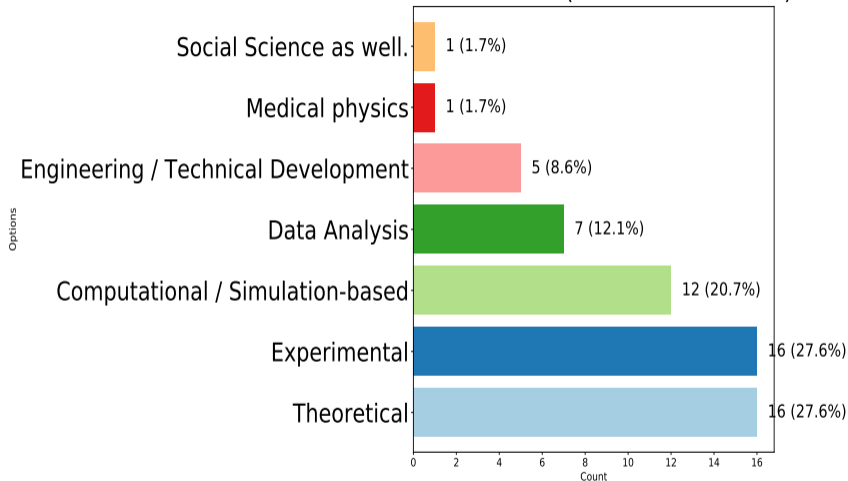
Are there any other fields you are significantly involved in? (Total Selections: 50)



BACKUP

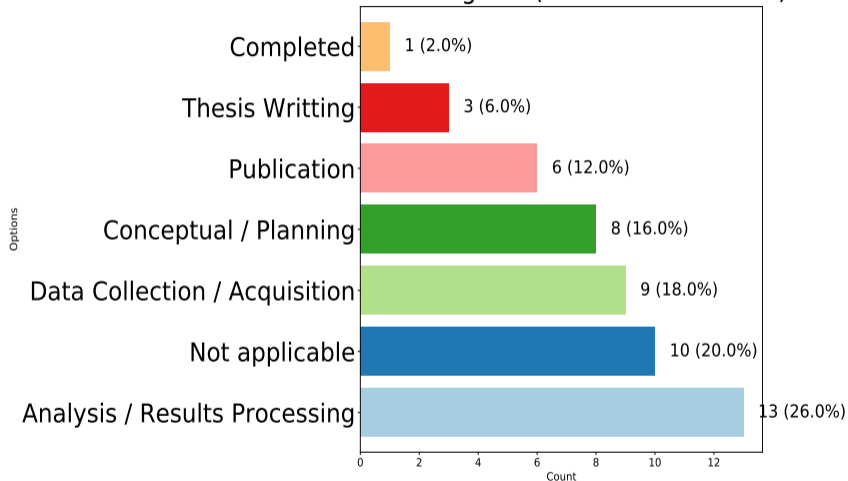


## What is the primary nature of your research work? (Total Selections: 58)

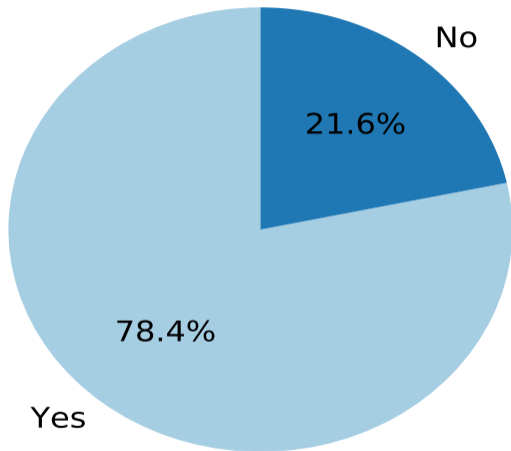


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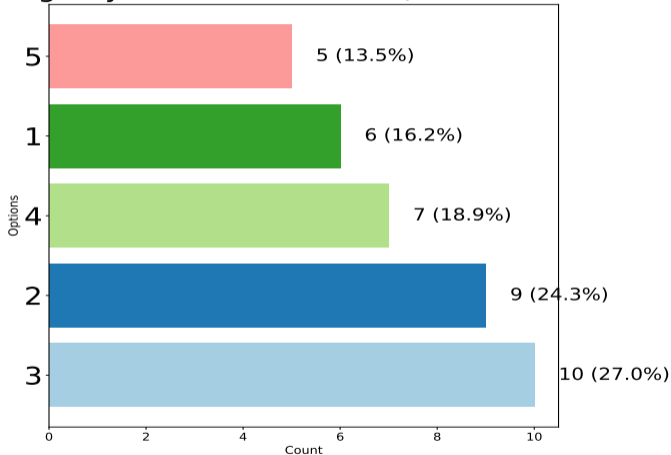
# In which stage are any experiments you are working on? (Total Selections: 50)



Do you work in a research group? (Responses: 37)

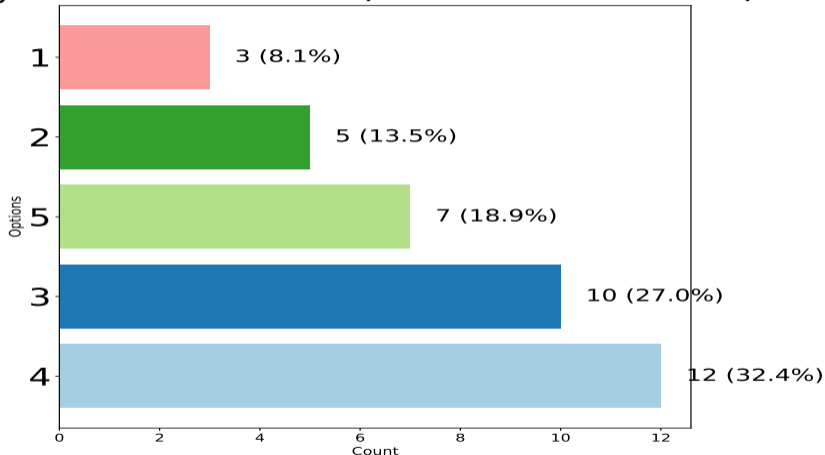


# How informed do you feel about decision-making processes and the overall functioning of your INSTITUTION? (Total Selections: 37)



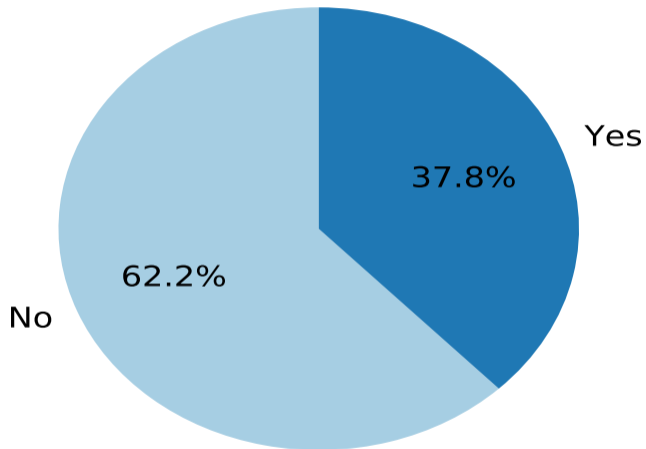
**BACKUP**

Would you like to be more involved in the decision-making processes within your INSTITUTION? (Total Selections: 37)

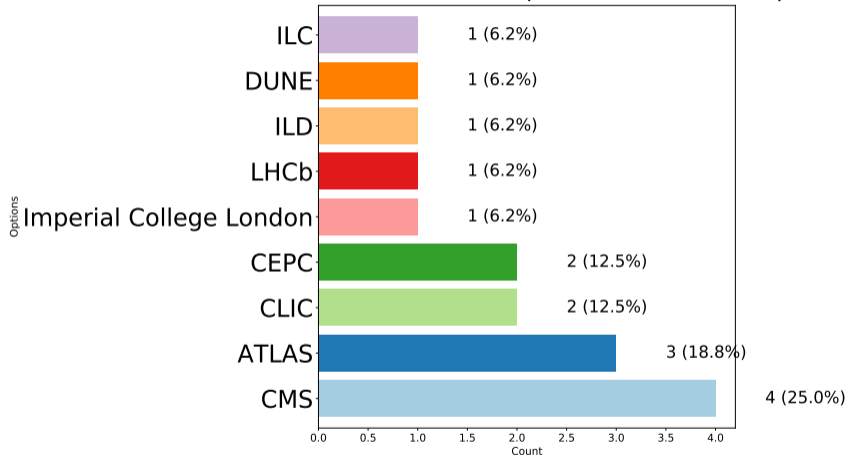


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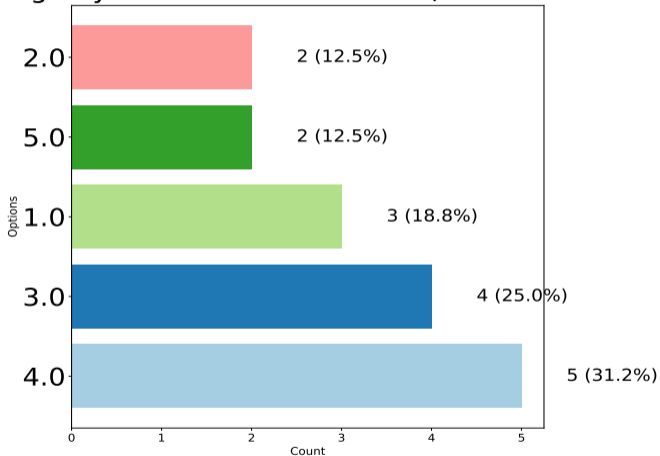
Do you work in a collaboration? (Responses: 37)



If the answer on the previous question was "YES" please specify your collaboration name: (Total Selections: 16)



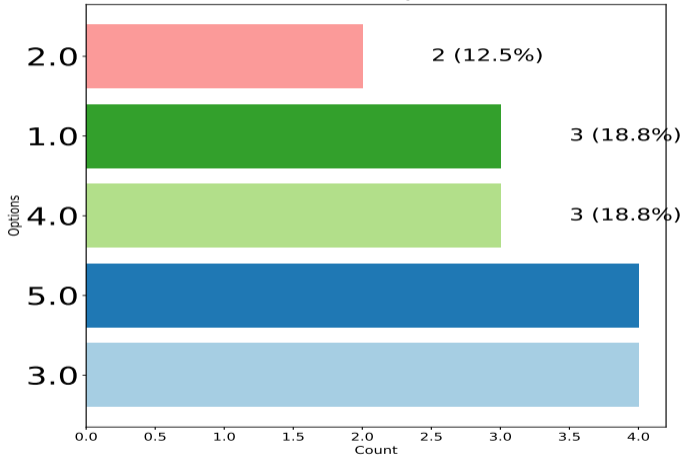
How informed do you feel about decision-making processes and the overall functioning of your COLLABORATION? (Total Selections: 16)



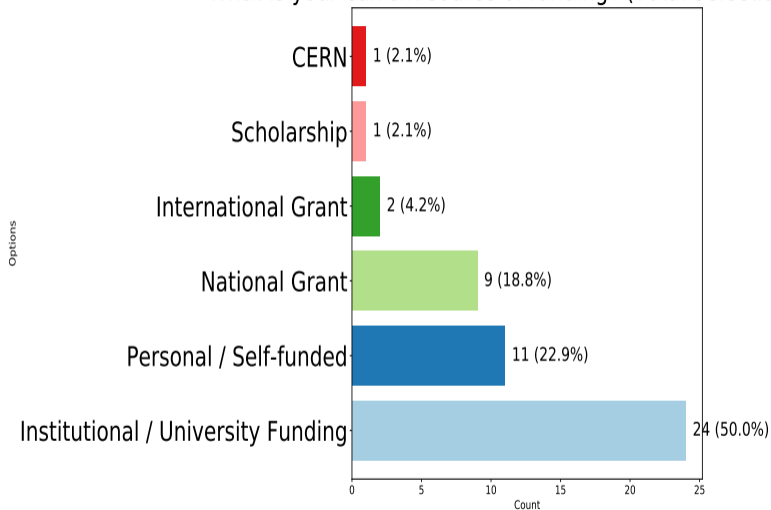
**BACKUP**



Would you like to be more involved in the decision-making processes within your COLLABORATION? (Total Selections: 16)

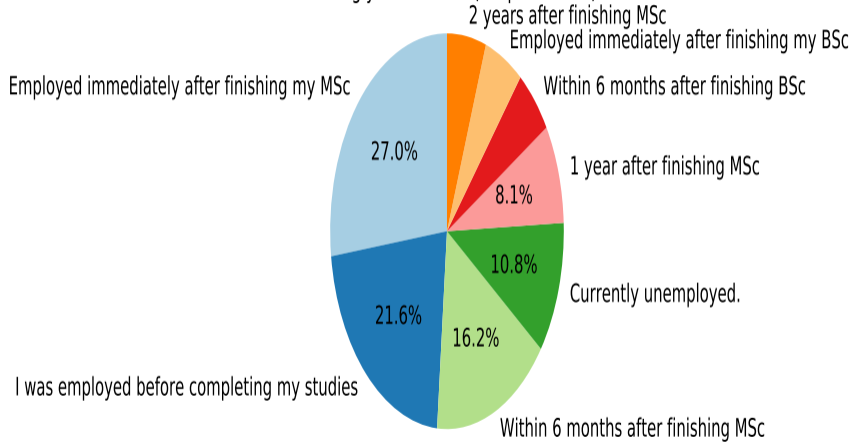


## What is your current source of funding? (Total Selections: 48)



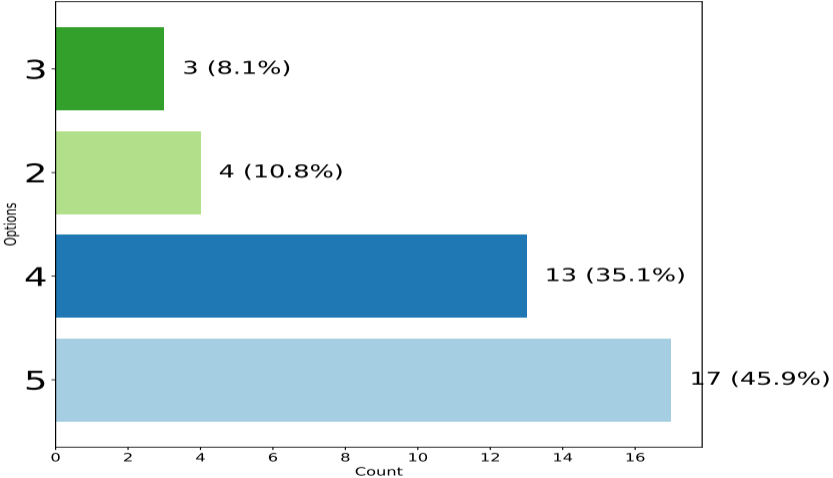
**BACKUP**

If you are currently employed, how long did you wait to find your job after finishing your studies? (Responses: 37)

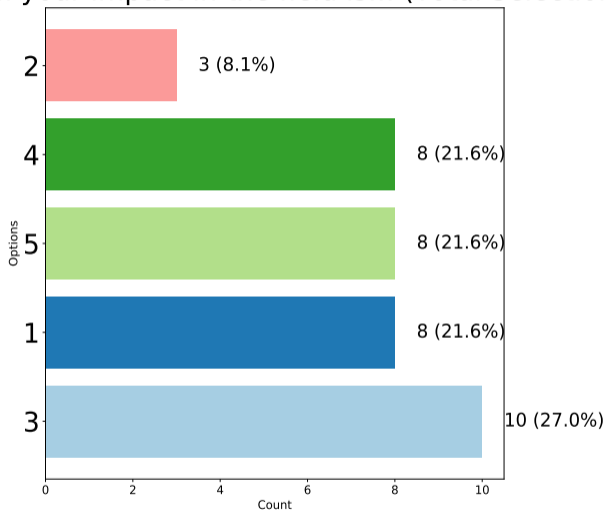


**BACKUP**

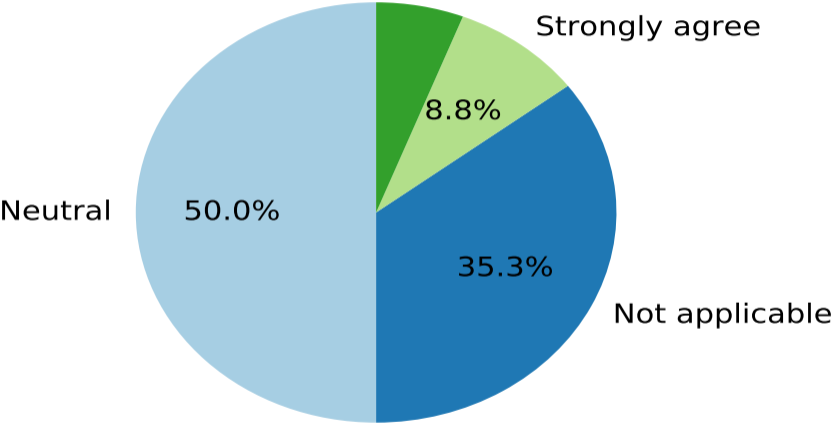
# How satisfied are you with your current field of research? (Total Selections: 37)



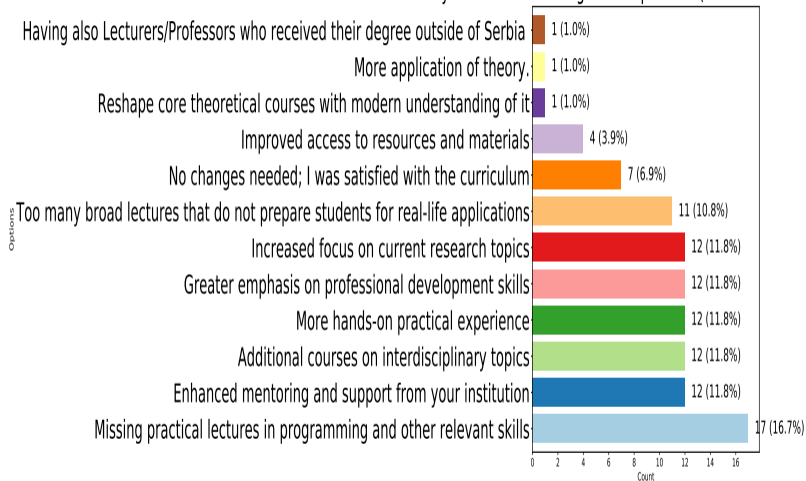
## Do you feel your impact in the field is... (Total Selections: 37)



Does your h-index accurately reflect your contributions to the field? (Responses: 34)

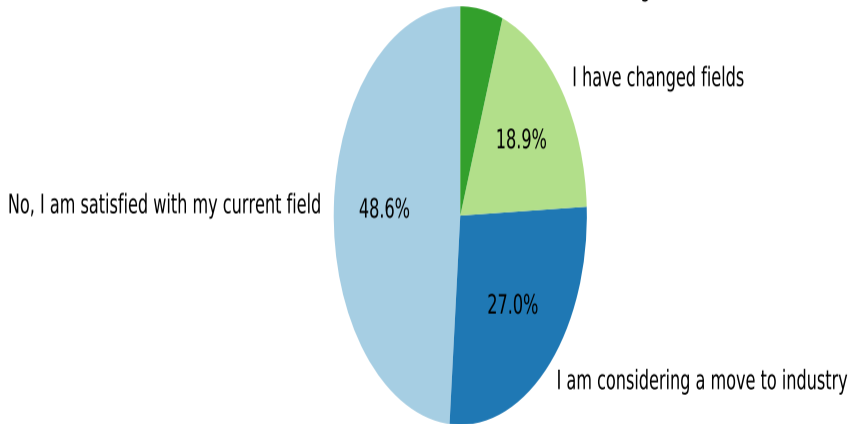


## What aspects of your curriculum would you like to see changed or improved? (Total Selections: 102)



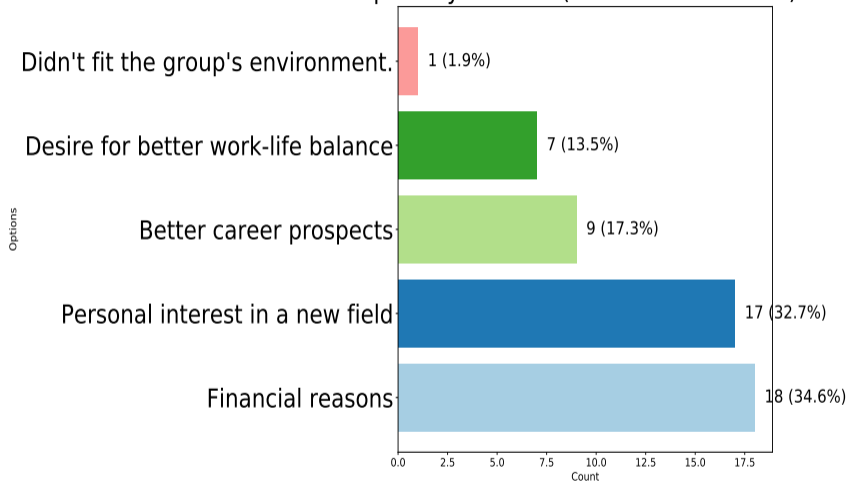
BACKUP

Have you changed your research field, or would you like to? (Responses: 37)





### If you would change fields, what is the primary reason? (Total Selections: 52)



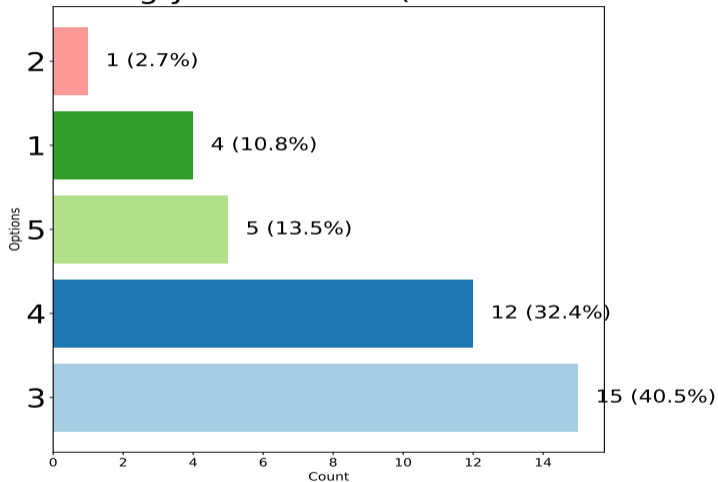
**BACKUP**

If you are no longer in Serbia, what were the main reasons for your move? (Total Selections: 73)



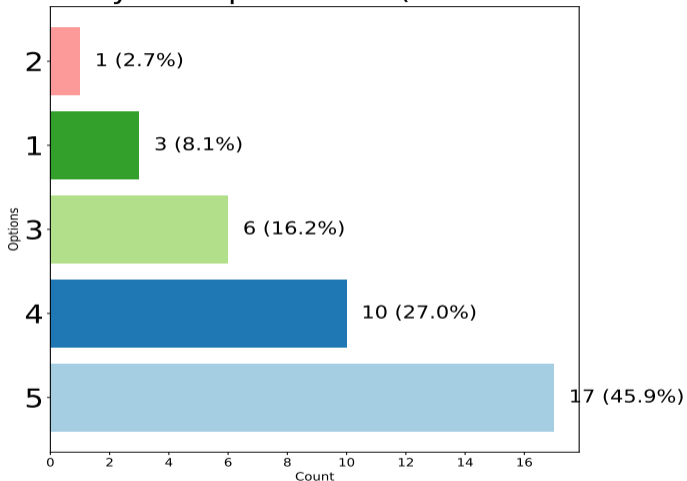
BACKUP

## How would you rate the quality of lectures during your studies? (Total Selections: 37)



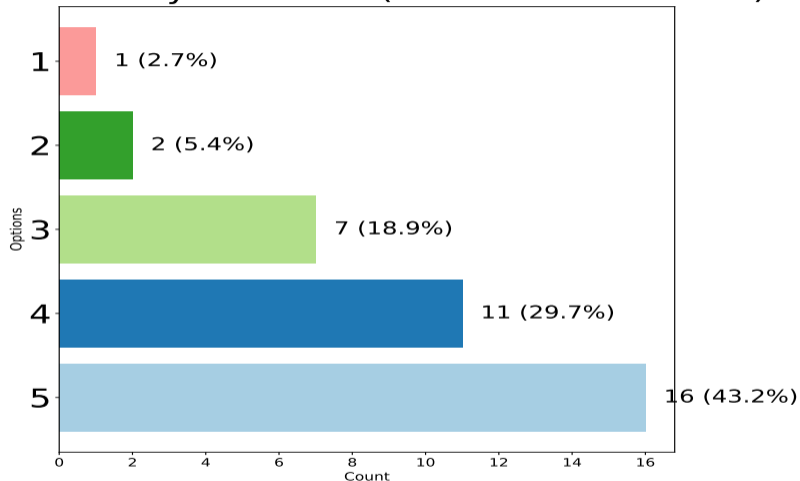
**BACKUP**

## How would you rate the accessibility and support from your supervisors? (Total Selections: 37)



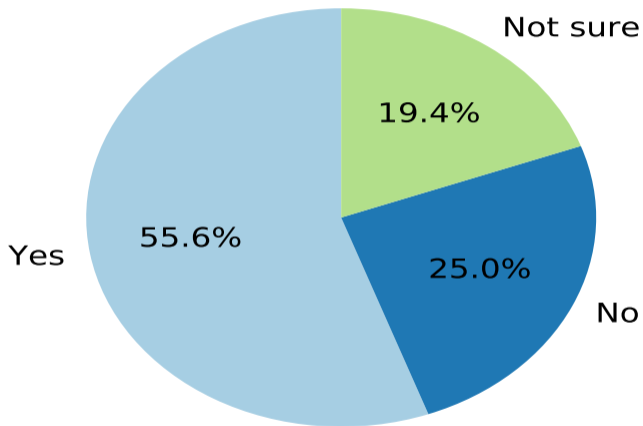
**BACKUP**

## How would you rate your mental health in relation to your work? (Total Selections: 37)



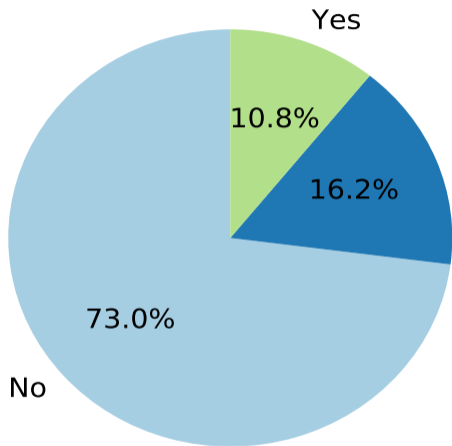
**BACKUP**

Do you feel comfortable discussing mental health concerns at work? (Responses: 36)



**BACKUP**

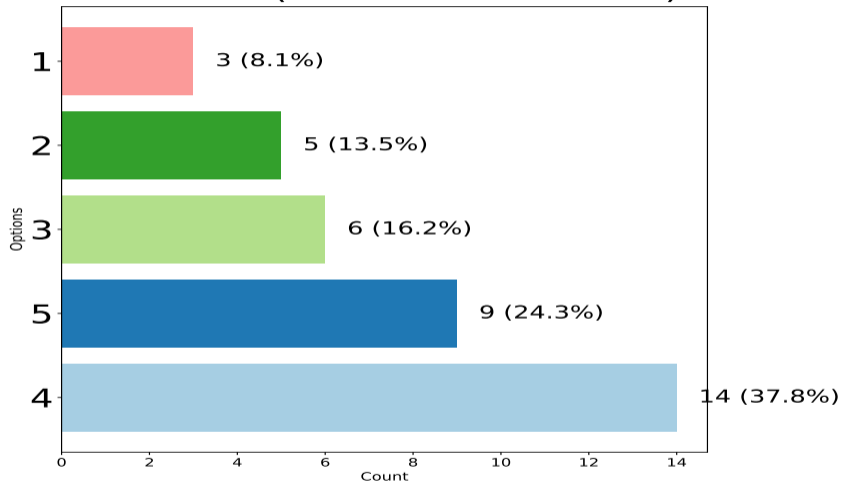
Have you experienced any form of discrimination in your workplace? (Responses: 37)



Prefer not to say

**BACKUP**

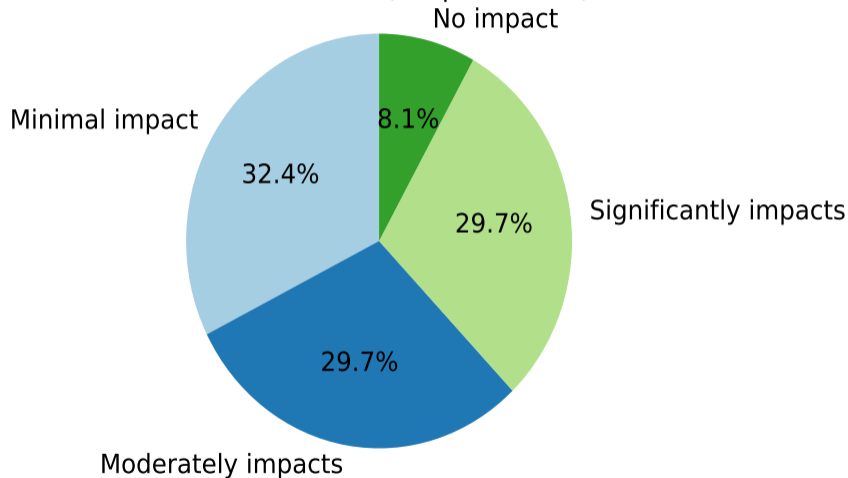
## How would you rate your work-life balance? (Total Selections: 37)



**BACKUP**

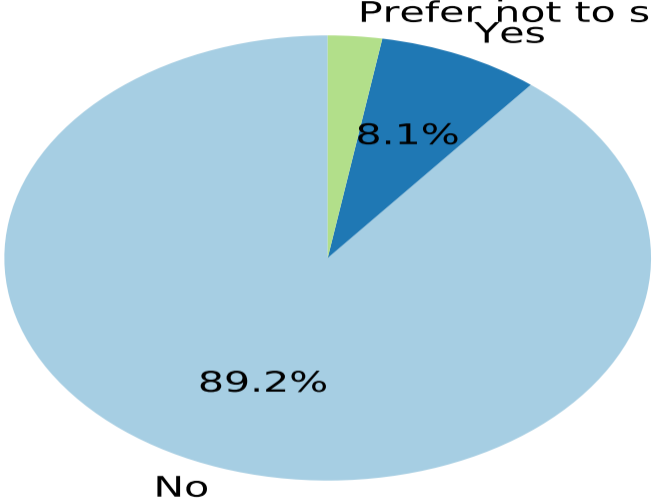


Does your work impact your daily life outside of work? (Responses: 37)

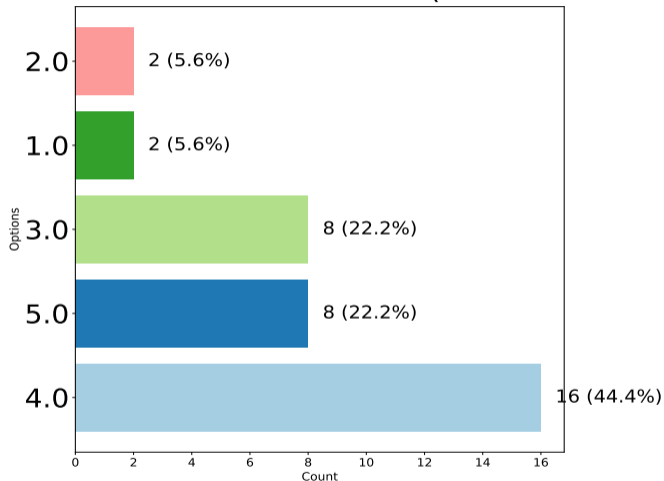


**BACKUP**

# Do you have children? (Responses: 37)

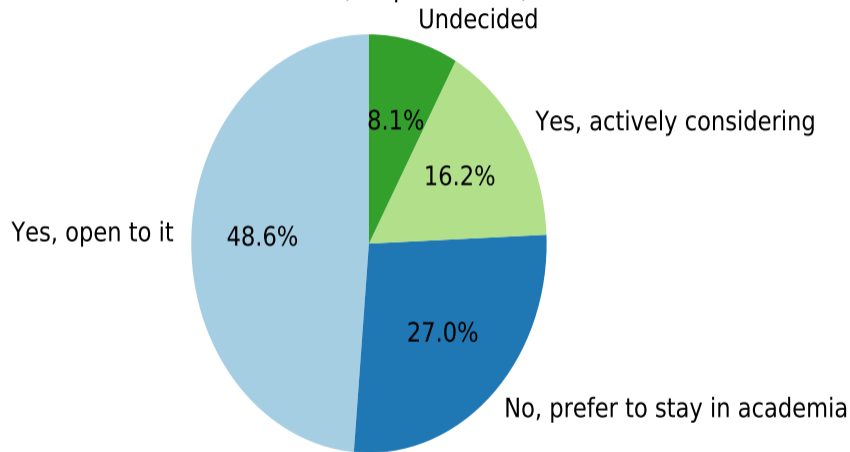


## Are you optimistic about your career prospects in academia or research? (Total Selections: 36)



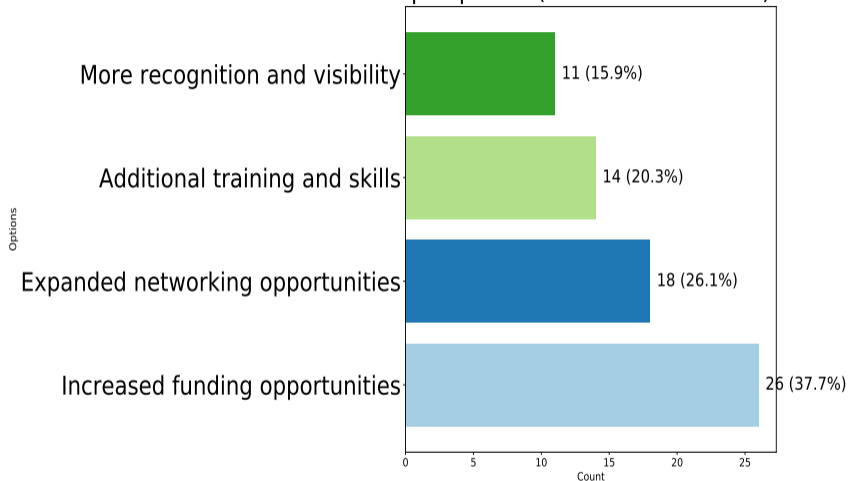
**BACKUP**

Would you consider a career outside of academia? (Responses: 37)



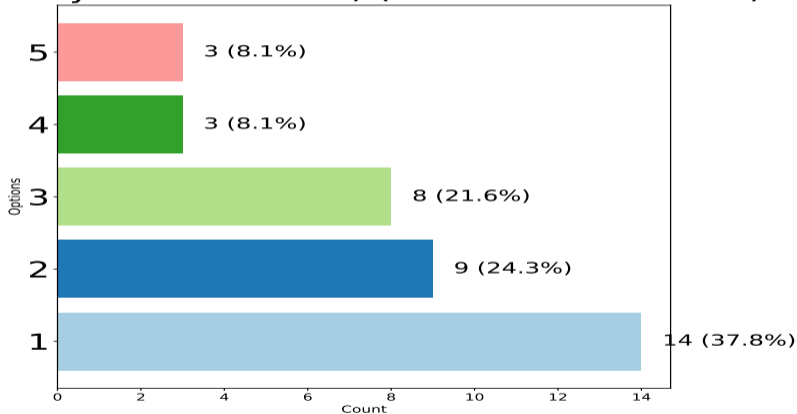
**BACKUP**

## What would most improve your career prospects? (Total Selections: 69)



**BACKUP**

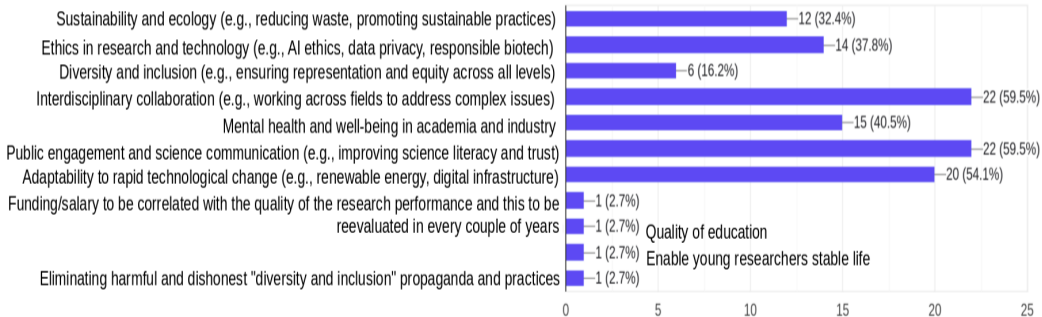
How well-informed are you about the current strategies for advancing science in Serbia? (Rate on a scale from 1 to 5, where 1 = Not informed at all, and 5 = Very well-informed) (Total Selections: 37)



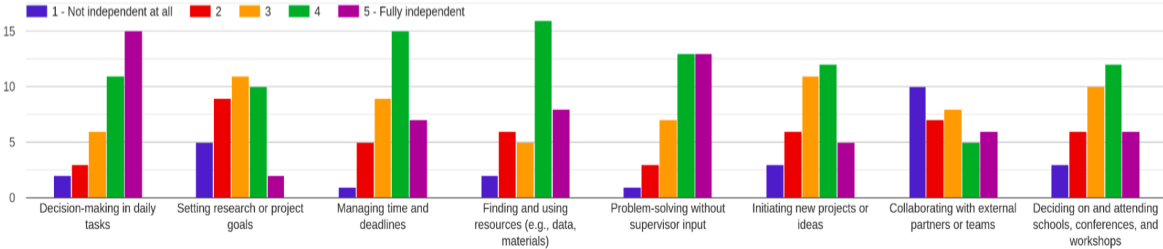
BACKUP

# Which of the following areas do you believe are most important for advancing a responsible and inclusive future in science and society (Select all that apply)

37 responses

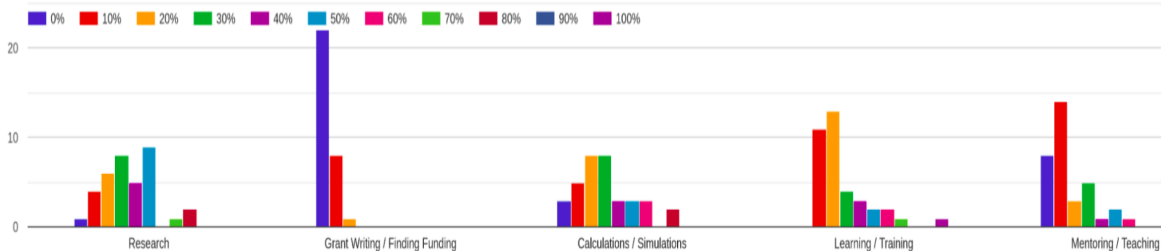


How independent are you in the following aspects of your work? (Rate each on a scale from 1 to 5, where 1 = Not independent at all (I rely entirely on my supervisor/employer), and 5 = Fully independent (I work entirely on my own))





How do you divide your time between the following activities? (Please estimate the percentage of time spent on each in a typical workweek)



## If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (1) I would work more on popularisation of science among young people and kids (for example highschool students primarily)
- ▶ (2) Greater visibility of our work to broader audience.
- ▶ (3) -Funding/salary to be correlated with the quality of the research performance and this to be reevaluated in every couple of years;  
-Attracting researchers with different educational backgrounds and encouraging international collaboration;  
-Introducing more paid positions for junior researchers, such as interns, master and PhD students, as is the standard in most countries;
- ▶ (4) In Serbia: Increase the quality control of research, by involving an international committee. Reduce the number of researchers in all institutions. Increase the quality of education by sending students to mandatory international programs, where they can get properly educated, and bring the knowledge back.

BACKUP

If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (5) More stable funding for young researchers e.g. research institutes applying directives they got from the Ministry of Science to give young researchers work contracts in duration of their vocation title. Generally proper financial security is the most important.
- ▶ (6) I'd bring more philosophy-related topics into every scientific field. Ethics is something all of us lack.
- ▶ (7) I would resign
- ▶ (8) Restoring the image of highly-educated people in the eyes of the public.
- ▶ (9) Strengthening of education at all levels, starting from primary school, motivation of researchers and professors, buying new equipment
- ▶ (10) More structured organization in general.

If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (11) 1. Follow the law that already exists regarding workspace/office (everyone should have a chair and a desk when they are employed, preferably without bugs or/and chemicals around); 2. Let people who finished Oxford/Cambridge masters (and other that don't have Bologna system) apply to a PhD at the University of Belgrade; 3. Have staff at every academic institution that are responsible for paperwork regarding equipment, conference/workshop organisation and travelling; for paperwork regarding grants (writing, applying, and helping during the project), finance support. 4. Have staff responsible for social media and website (upgrading it frequently); 5. Have paid subscriptions to read and download papers from most prestigious scientific journals; 6. Everybody should have laptops/desktop computers at the office they are working at; probably have more ideas....

## If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (12/1) - One the reasons I frequently hear when talking about leaving academia is tough nature of career right after finishing the PhD. I think that requirement of moving across the country/countries is very tough on someone who is thinking of starting their family. A good thing in Serbia is that multiple postdocs are not required, and there is no gender-based discrimination, but the resources for doing science in the country are limited, as well as the topics (one can only do very little to no hardware so people do software) and there are some problems such as the ones listed below. As in many countries, it is often people leave academia as the salary is okay, but still small compared to the one can get for similar amount of work in industry.
  - One thing that seems to be driving away people from the Faculty of Physics (and thus CMS) is waiting too long for an employment. A new PhD student starts in October and will get their first salary in May, whereas the same is not true for Institute of Physics which offers position almost immediately...

## If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (12/2) ...Also, it seems that the funding at the Faculty of Physics is limited to 3 years for some cases, so the students entering the 4th/5th year are unsure whether they'll be salaried.
  - Another thing that slows down PhD students who do their PhD in Serbia is the requirement of Faculty of Physics (not University of Belgrade) for PhD students to have at least 2 papers in order to obtain their PhD. Two PhD students cannot use the same paper to graduate, so two PhD students from the same university thus should not work on the same paper. Although this requirement may have sense for small experiments, in the case of ATLAS and CMS this is a very strict requirement given the size of each of the analyses. This, and the 2-paper requirement is one of the main things that drives people away from doing a joint PhD with University of Belgrade, as the PhD can get extended a lot until the two papers are submitted...

If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (12/3)...I personally think that this requirement must be relaxed if Serbian institutions want more international collaboration through cotutelles.
  - Within IPB there does not seem to be any group structure. As everyone can work online non-stop the young researchers only have a vague idea what each of the senior members of the team is doing. Also, exposure to Vinca institute's CMS and future collider groups and Novi Sad's ISOLDE groups are non-existent. I think Serbian scientists should try to have maybe an online meeting at the start of the school year for the new PhD/MSc students in which every institution would introduce in brief their team members with expertise since I do not think many PhD students in Belgrade know what Novi Sad is doing and vice versa. I think that the 'Serbian CERN community' exists only on paper, everyone feels a bit too independent...

If you were in the position of those currently making decisions in your organization or field, what changes would you implement?(Respo: 13)

- ▶ (12/4)...- Also, I think that the curriculum at the Faculty of Physics must be modernised and feature more working on the computer, as the students often feel very insecure about their IT skills. During my entire BSc studies I only had a single 2 ECTS programming course.
  - When it comes to doing a PhD in Serbia, I personally like the fact that it is almost fully research oriented, and the required courses are very relevant for the PhD. However, I think MSc and BSc programs need to be modernised (feature more courses on computing/simulations/stats).
- ▶ (13) If possible, I would aim to implement a system across the Physics Faculties at all universities in Serbia to create a more meaningful curriculum, emphasizing hands-on practice and programming.