

ECFA SURVEY

*'RECOGNITION OF INDIVIDUALS IN
LARGE COLLABORATIONS'*

Presented by Stan Bentvelsen

ECFA

European Committee for Future Accelerators



RECFA WORKING GROUP

Recognition of individuals in large collaborations - started in April 2018

- Working group initiated - with the idea to organise a community wide survey
 - Calin Alexa (ECFA scientific secretary until summer 2018)
 - Stan Bentvelsen
 - Jorgen D'Hondt (*ECFA chair*)
 - Roger Forty
 - Carlos Lacasta (ECFA scientific secretary since summer 2018)
 - David Milstead
 - Peter Schleper
 - Antonio Zoccoli

Discussion in Alba on July 19, 2018

- Decided to proceed with the survey

“Map the landscape of what is currently being deployed in large collaborations to address the issue of recognizing the achievements of individuals”



SURVEY GENERAL

Web-based survey (survio.com)

- Start date: September 24, 2018
- End date: October 28, 2018

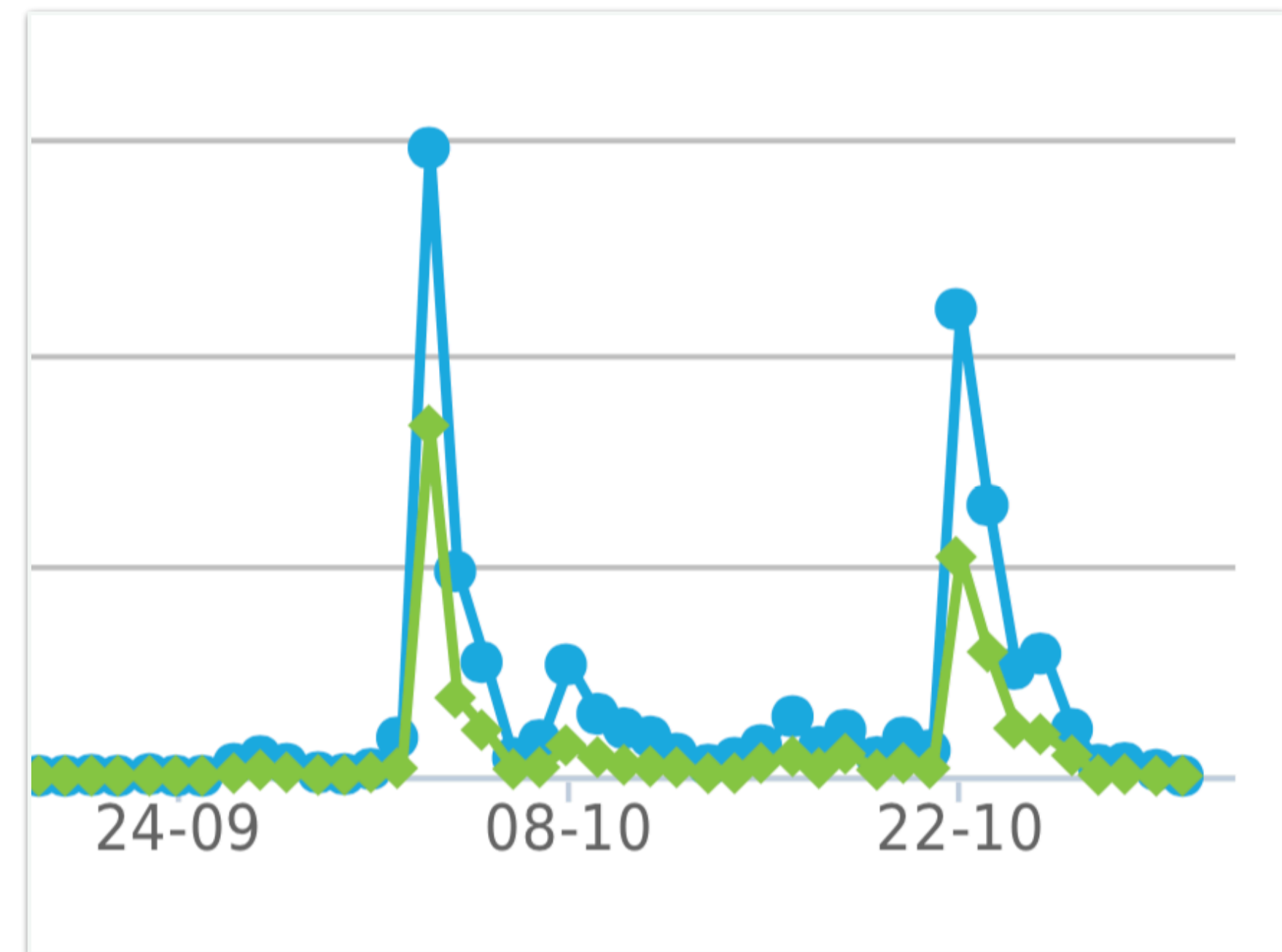
Announcements

- CERN courier
- CERN bulletin
- CERN EP Department email
 - October 3, 2018
- Follow-up campagnes

Total number of visits: 3194

Total number of completions: 1347

ECFA survey "Recognition of individuals in large collaborations"



Visits and completed surveys by date



SURVEY QUESTIONS

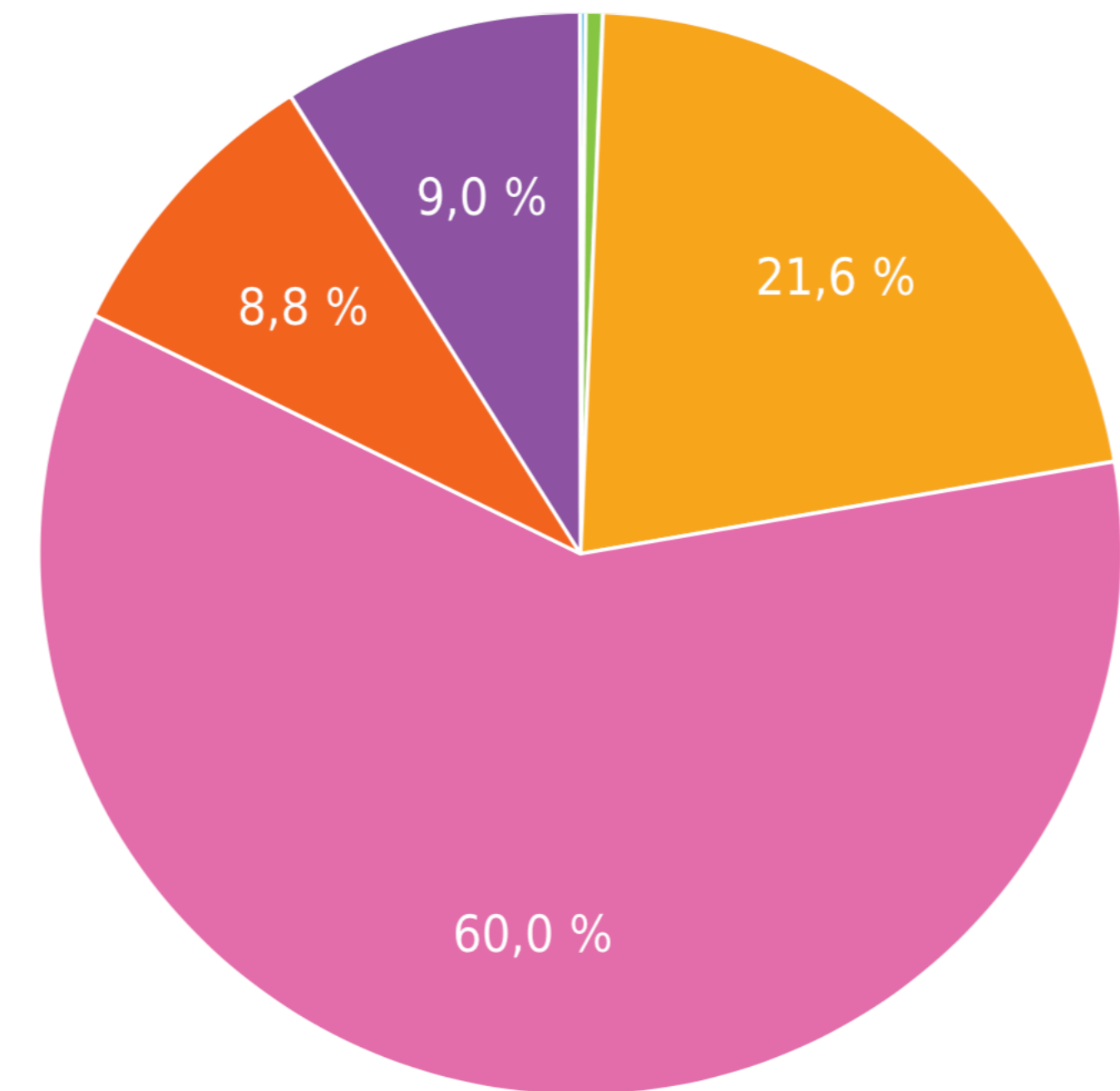
In total 24 questions, many with sub-questions

- 7 questions on personal information
- Followed by 71 scoring fields in total
 - Rating, ranking, coins

Time to completion:

- Majority took more than 10 minutes

- <1 min. (0,1 %)
- 2-5 min. (0,5 %)
- 5-10 min. (21,6 %)
- 10-30 min. (60,0 %)
- 30-60 min. (8,8 %)
- >60 min. (9,0 %)



PROCESSING DATA

ROOT analysis of the raw CSV file

- *We have produced many plots, all of them available on indigo together with detailed description of their content*

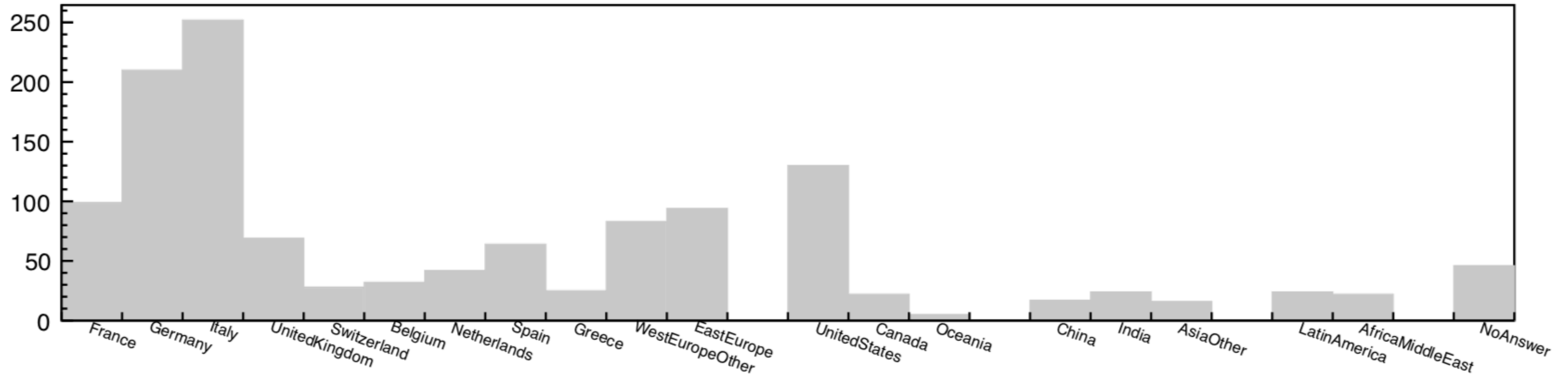
Invaluable help from Wouter Verkerke (Nikhef) to analyse the data

Few postprocessing issues:

- Merging countries with very small number of participants
 - Based on geographic proximity
 - Asia, Latin America, Eastern Europe, Oceania, Africa, ...
 - Regions of Europe
 - North, Central (West), South (incl Israel), East, outsideEU
 - Continents of the world
 - Europe, Americas, Asia, Other (Turkey, Middle East, Africa, Oceania)

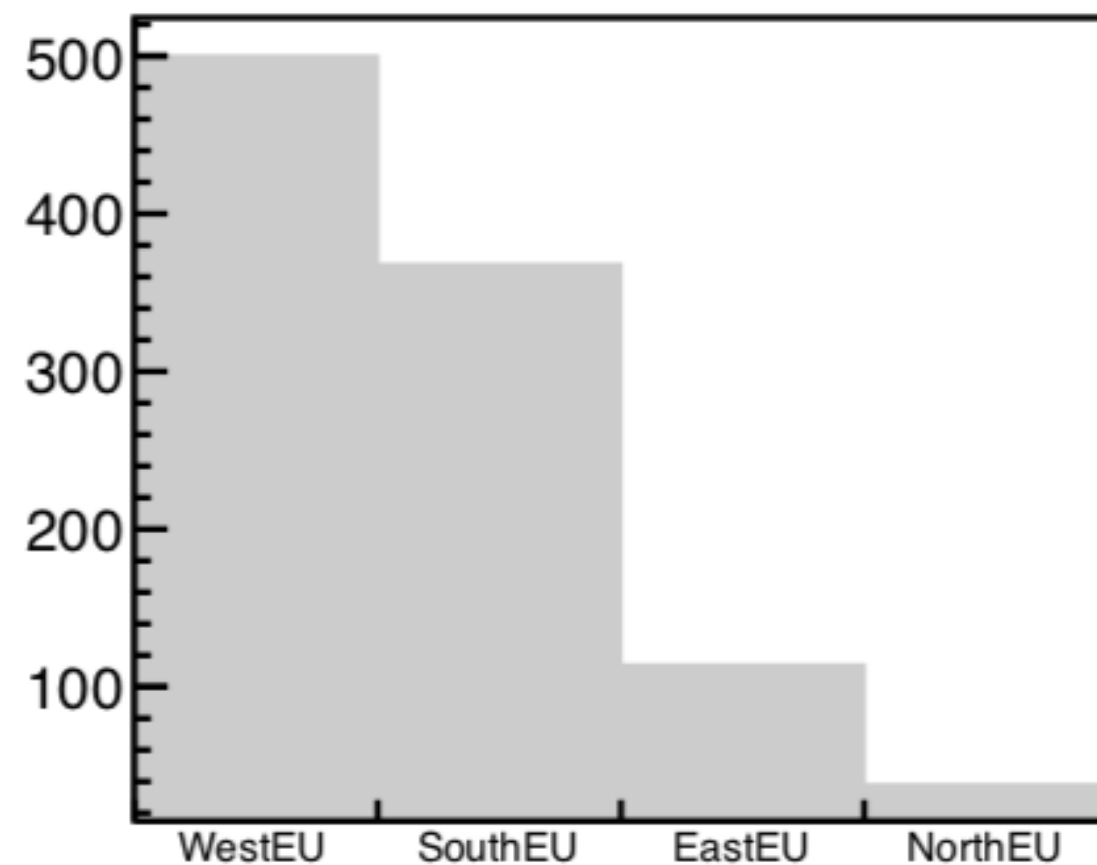


RESPONSES (FREQUENCY) BY COUNTRY

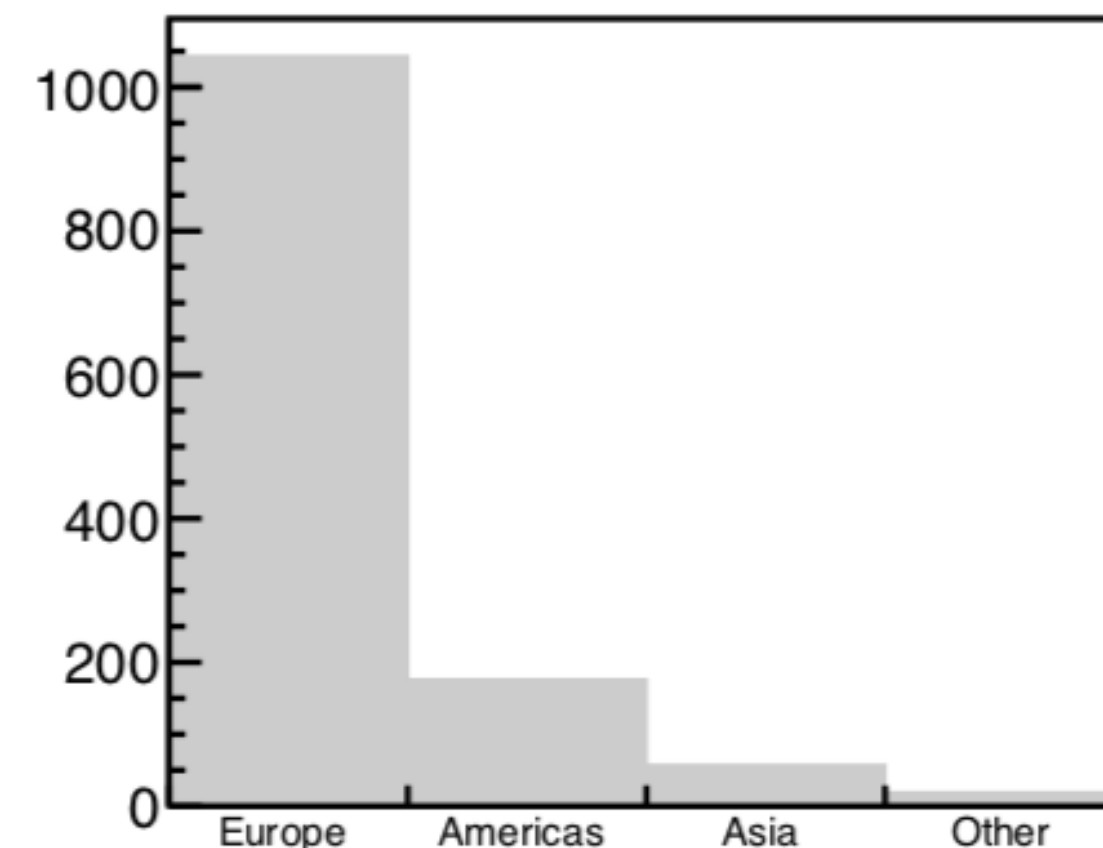


- European region and continents:

responses split by EUROPEAN REGION



responses split by WORLD CONTINENT



Europe is well represented by many countries
Some people do not want to answer - remain anonymous?



PROCESSING DATA - EXPERIMENTS

Few postprocessing issues

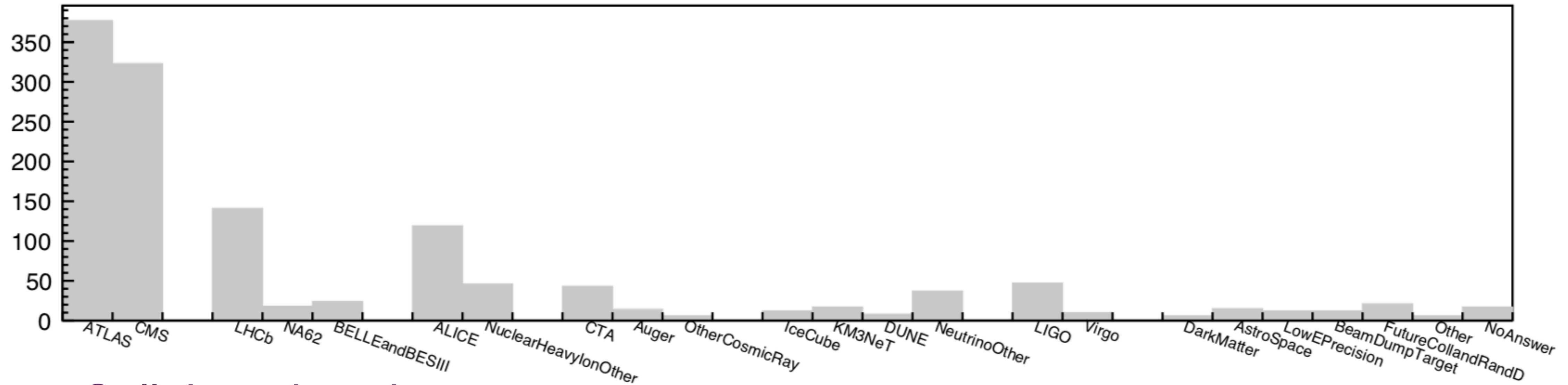
- Similar grouping of experiments
 - For cases with few respondents (~1-10) new group names have been introduced - see table

- The group CMS includes TOTEM
- NuclearHeavyIonOther = PANDA, AGATA, CBM, CLAS, GlueX, COMPASS, ISOLDE, STAR, nTOF, ...
- OtherCosmicRay = HESS, MAGIC, VERITAS, GRAND, ...
- The group KM3NeT includes ANTARES
- NeutrinoOther = SNO, SNO+, T2K, MicroBooNE, DoubleChooz, Borexino, Katrin, JUNO, MINERvA, NOvA, SoLid, ...
- DarkMatter = XENON, CUORE, CRESST, DES, DarkSide-20k, ...
- AstroSpace = EUCLID, FERMI, AMS, NASA, ...
- LowEPrecision = EDM, eEDM, nEDM, Muon g-2, AEgIS, COMET, Mu3e, VES IHEP,...
- FutureCollandRandD includes as well R&D towards medical applications
- BeamDumpTarget = SHIP, Magix, NA61/SHINE, ...
- Other = GERDA, LEGEND, H1, ZEUS, ... (due to few entries)

- Added higher-level grouping of experiments
 - Collaboration size:
 - Small: <100, Medium:100-300, Large:300-1000, XL:1000-3000, XXL: 3000+

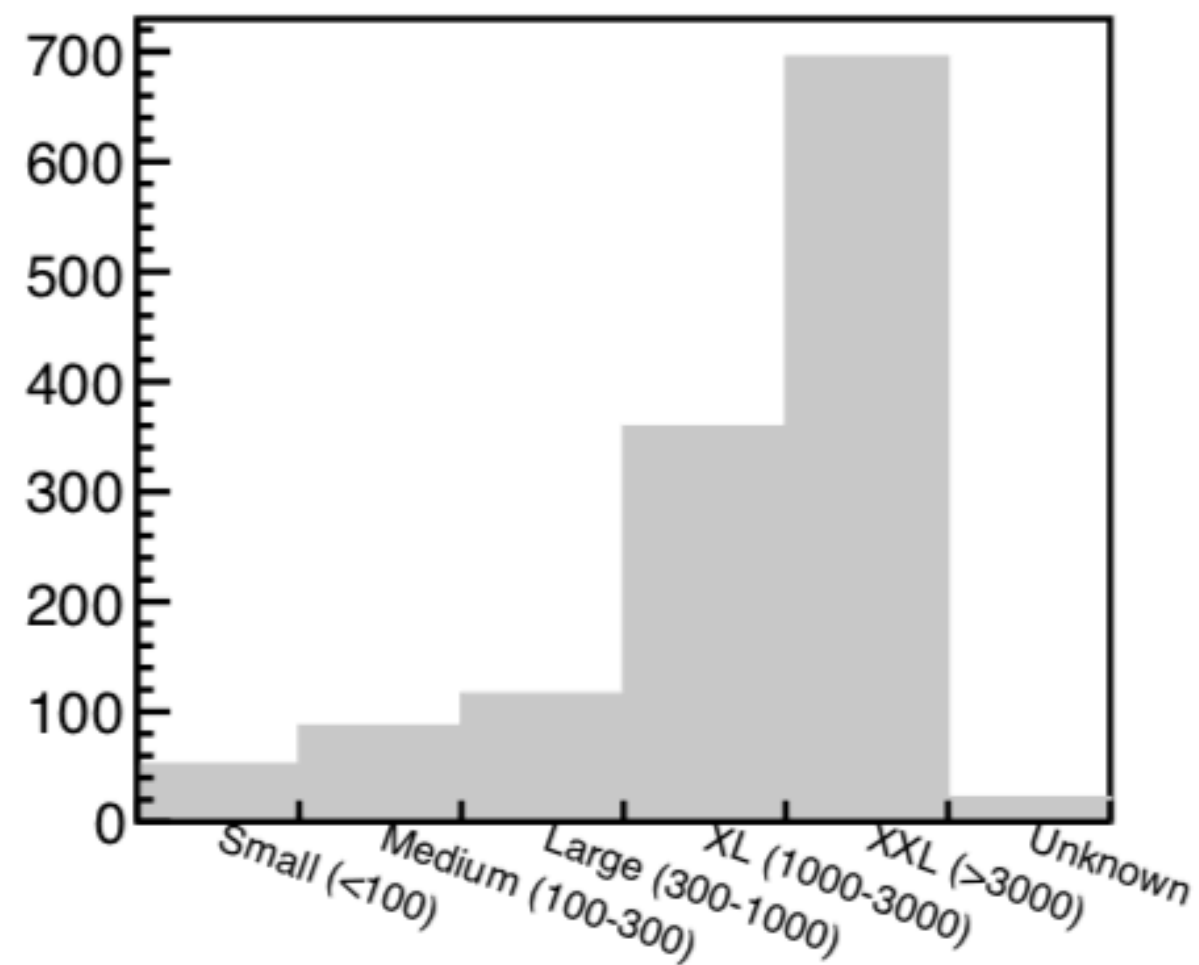


RESPONSES (COUNT) SPLIT BY EXPERIMENT



- Collaboration size

responses split by COLLABORATION SIZE

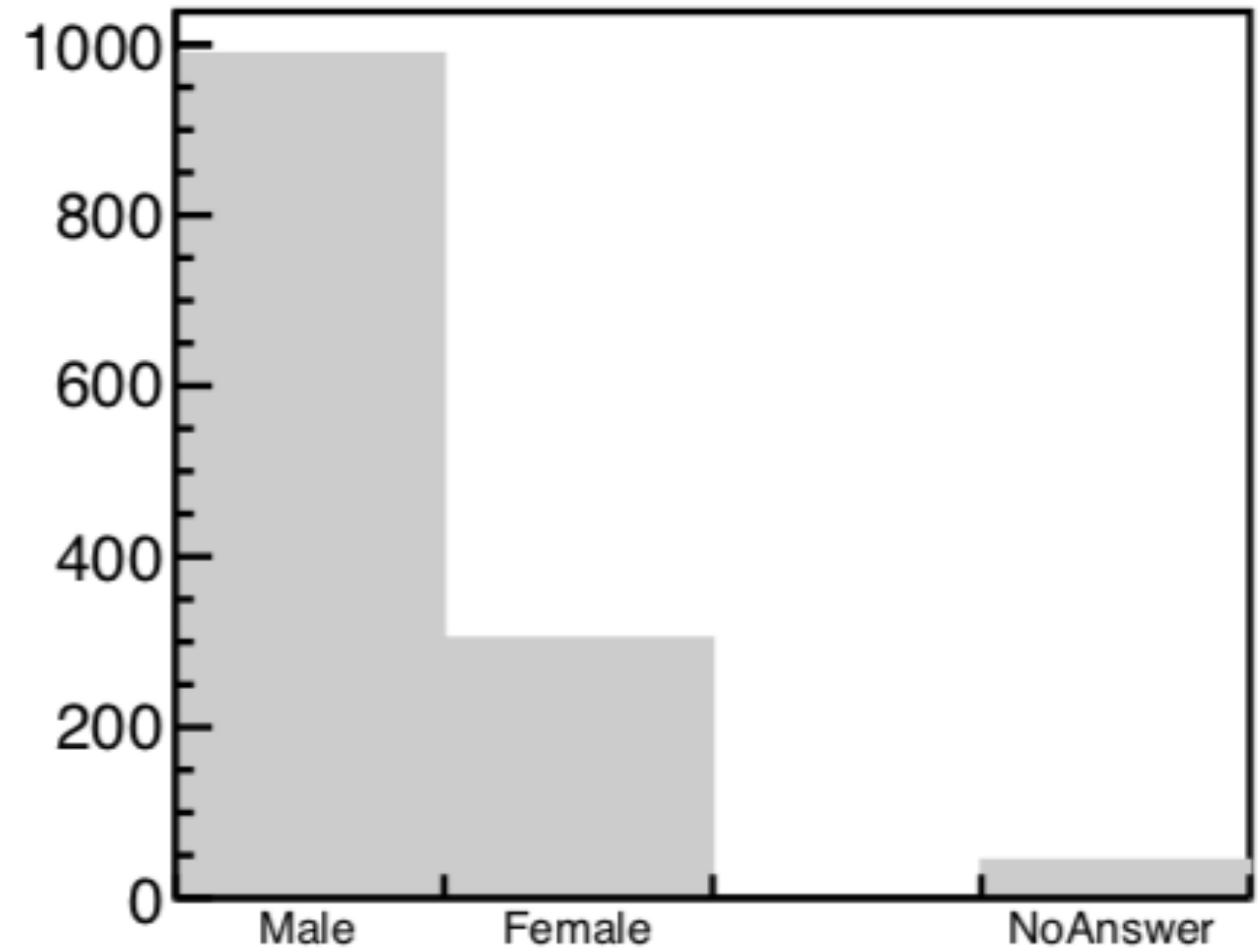


Large LHC collaborations well represented
 In addition large number of Astroparticle Physics experiments feel somehow connected to the ECFA community



RESPONSES (FREQUENCY) -GENDER AND DISCIPLINE

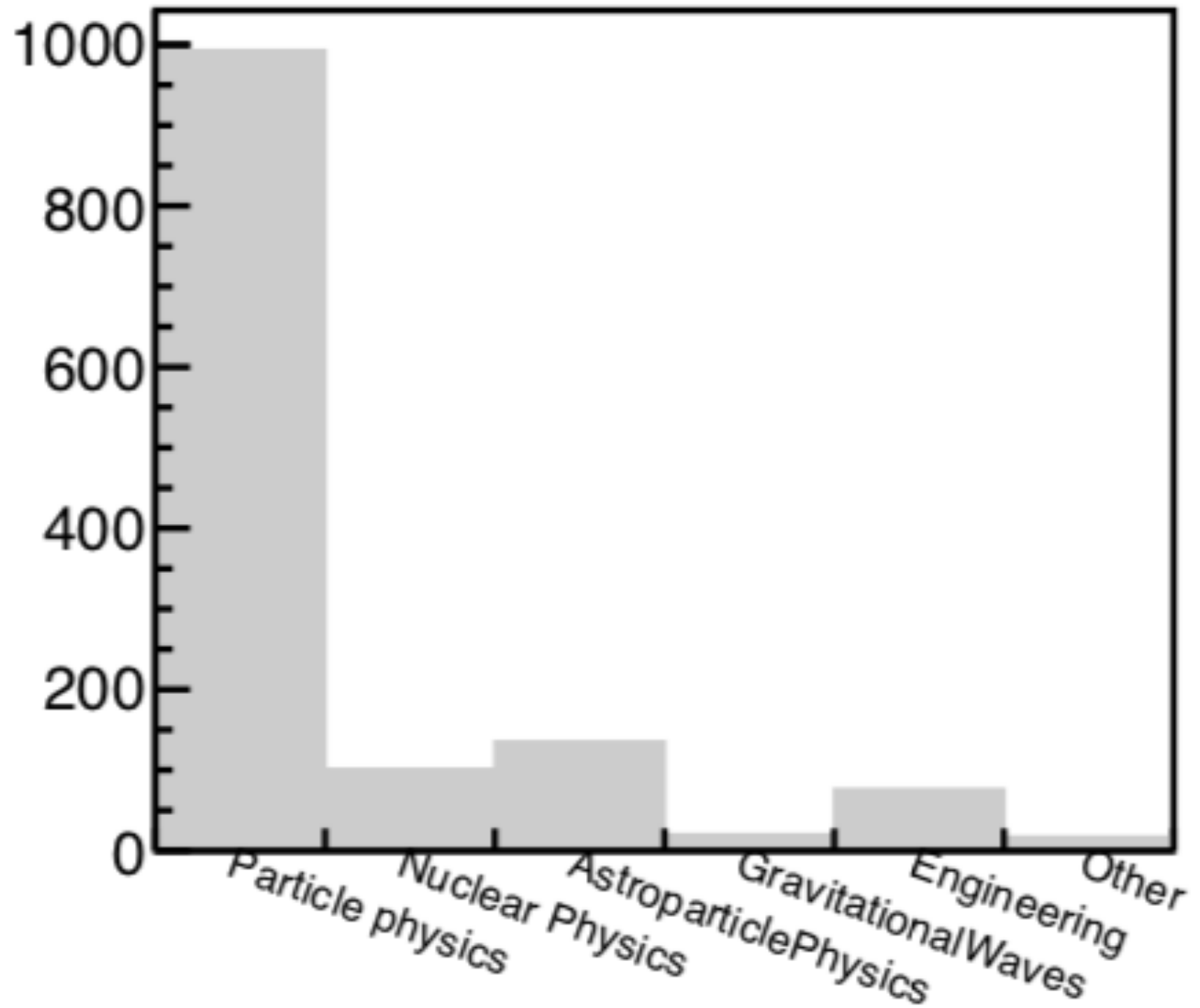
responses split by GENDER



Discipline

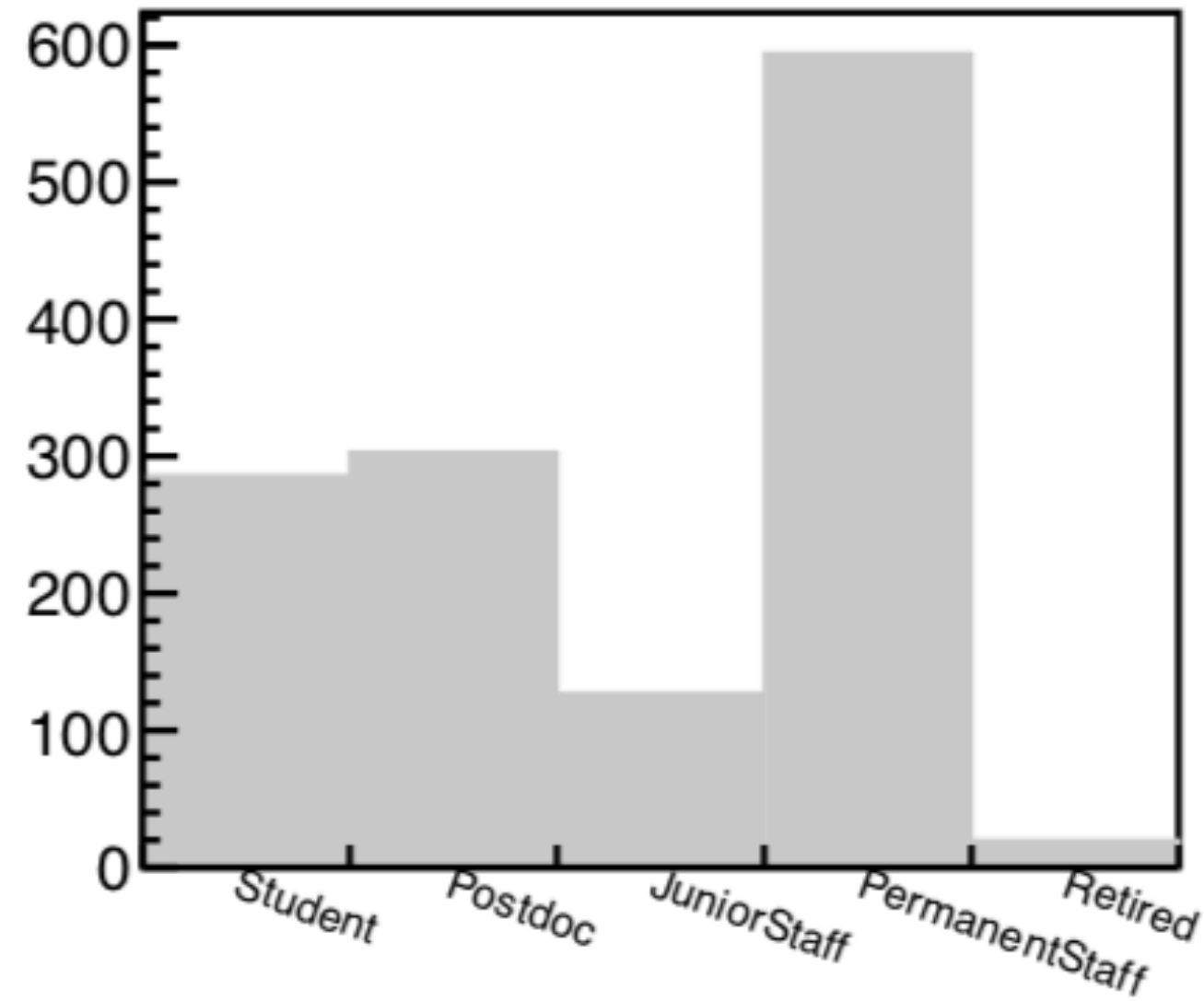
- Particle physics
- Nuclear Physics
- Astroparticle Physics
- Engineering
- Technician
- *Gravitational Waves*
- *Other*

responses split by DISCIPLINE

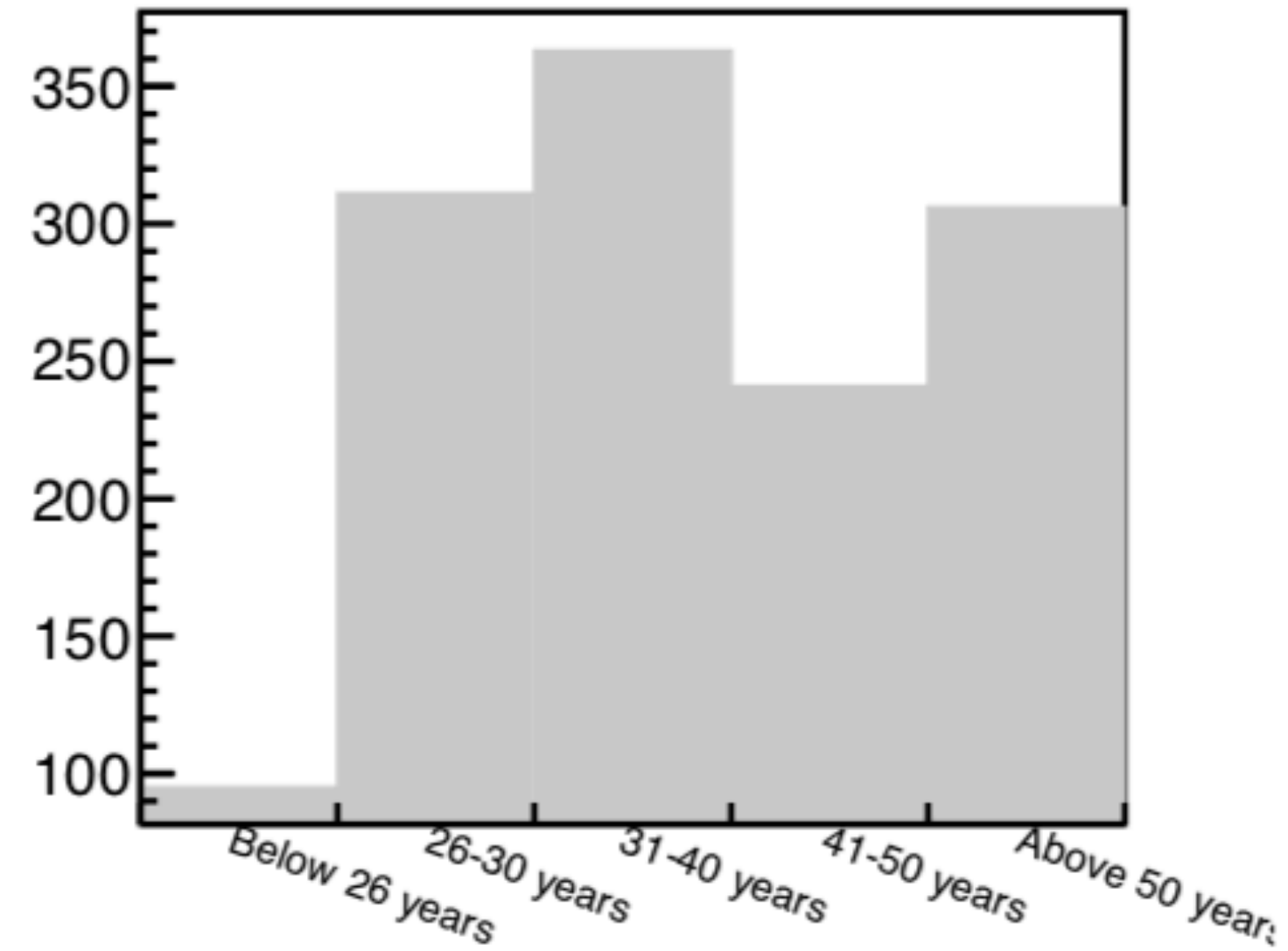


RESPONSES (FREQUENCY) BY CAREER STEP

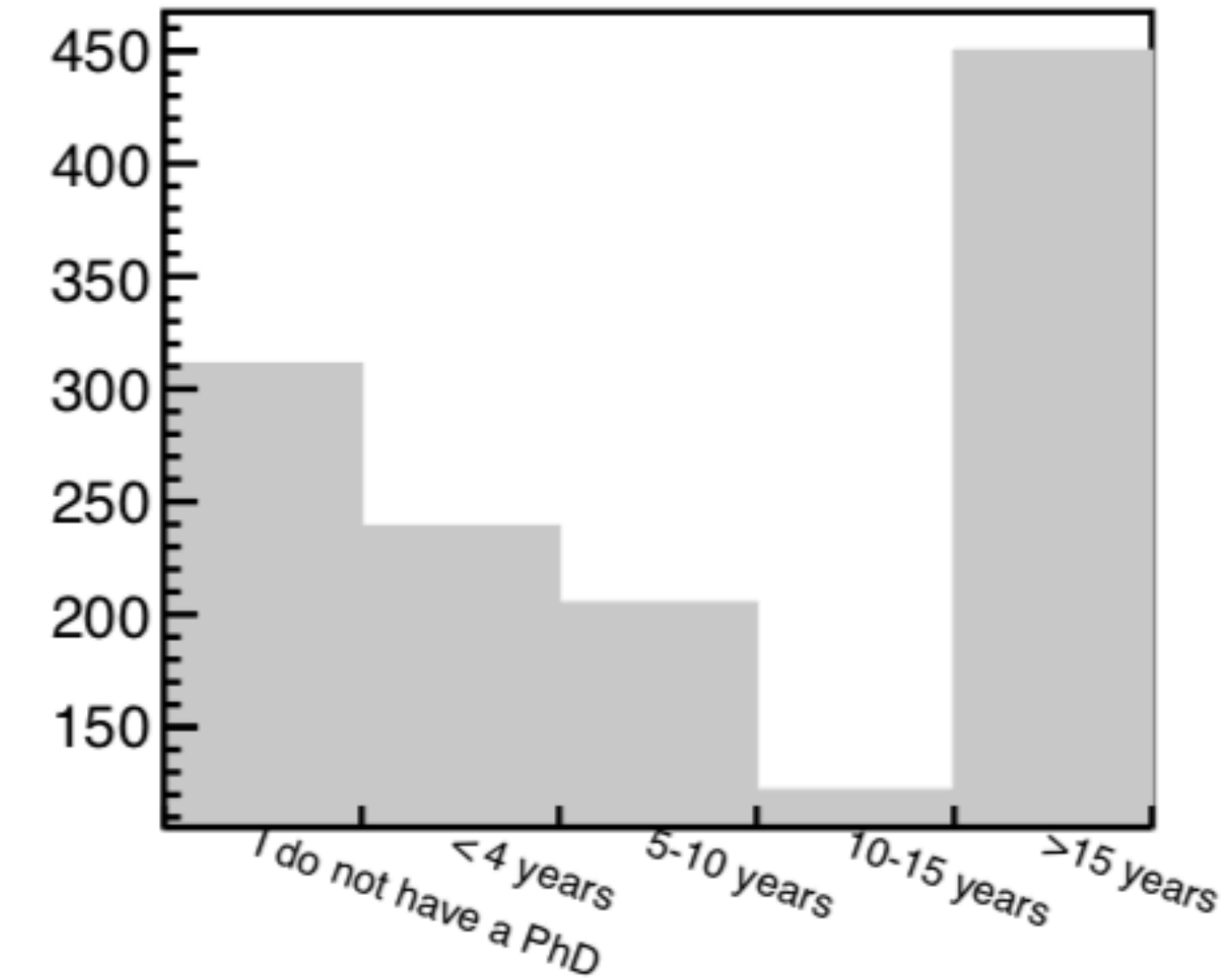
responses split by POSITION



responses split by AGE



responses split by WORKING EXPERIENCE



- Student
- PostDoc
- JuniorStaff
- PermanentStaff
- Retirement

Observed difference in response rates w.r.t. general population, e.g. 44% of respondents is PermanentStaff in survey, true fraction HEP-wide is substantially lower
The group of respondents is not necessarily representative for the full community

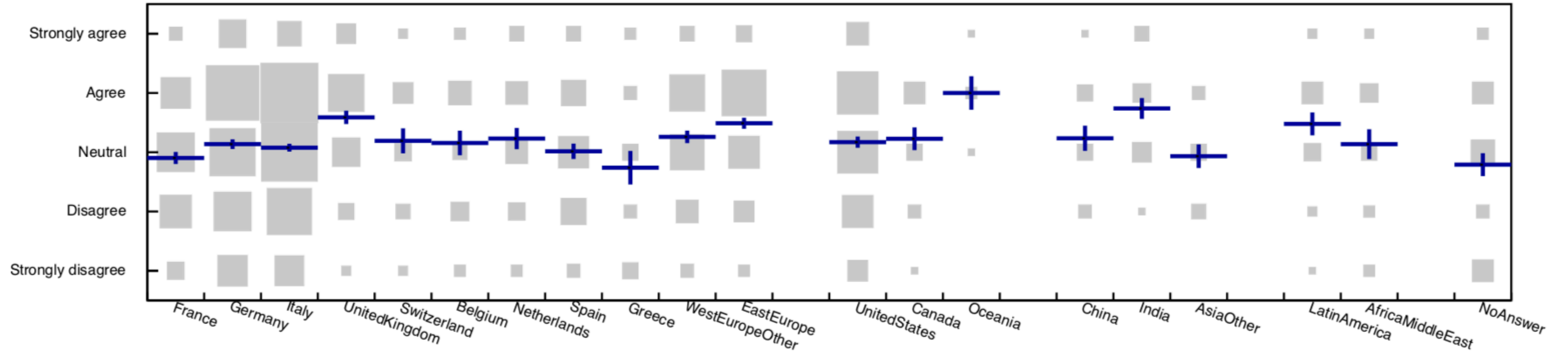


CONFERENCE TALKS - 1

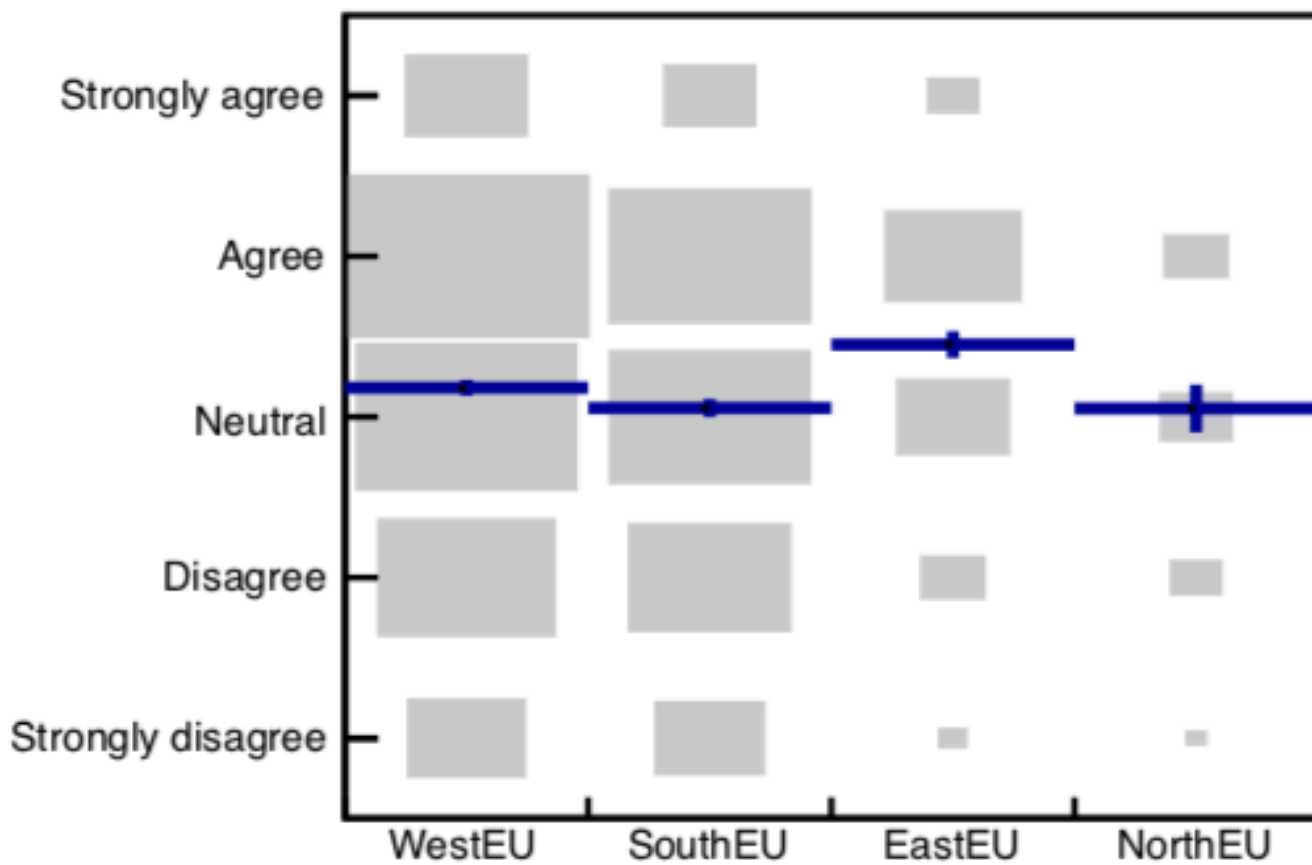
Question posed in survey as title of histo

The collaboration guidelines for speakers at conferences allow me to be creative and demonstrate my talents

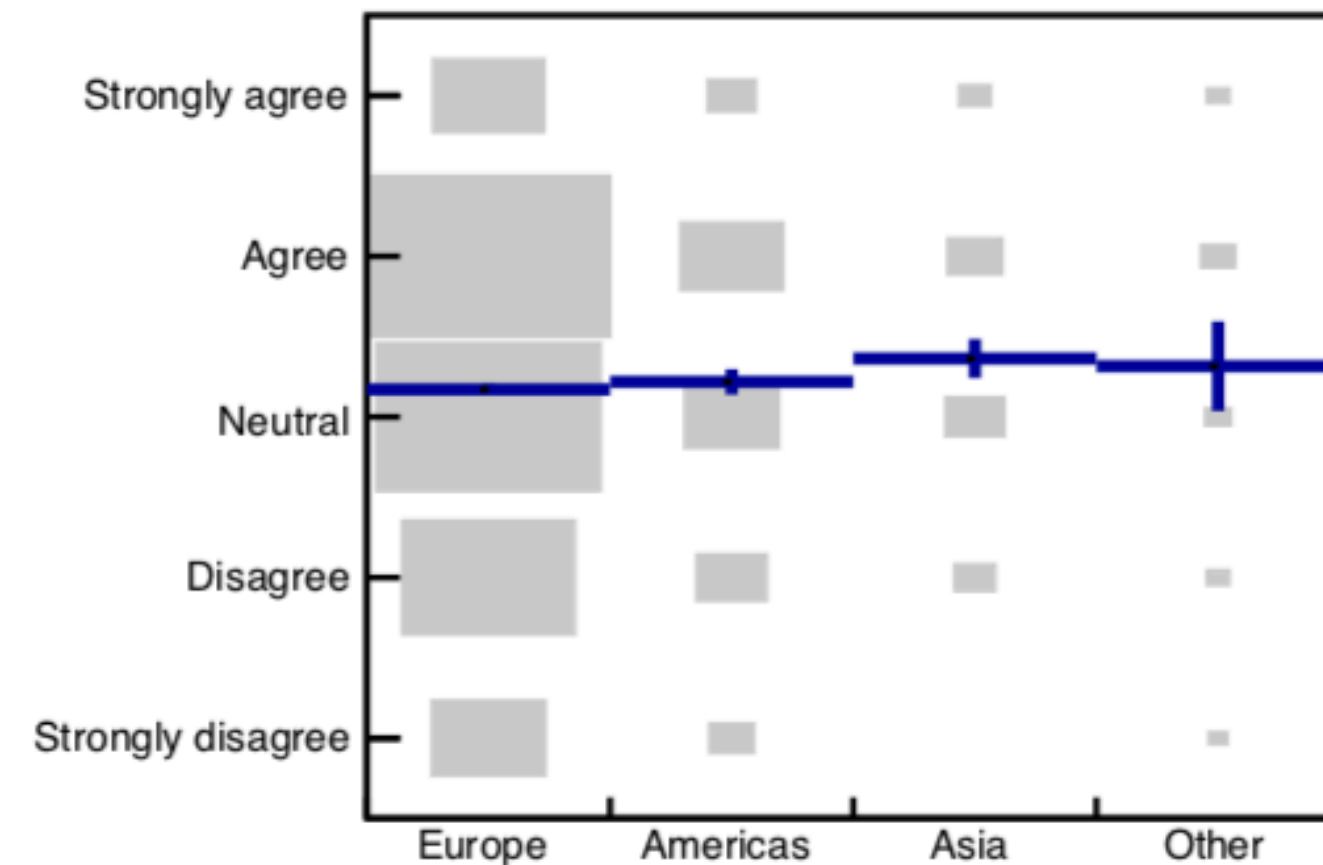
Score is assigned to numbers -2 to +2



responses split by EUROPEAN REGION



responses split by WORLD CONTINENT



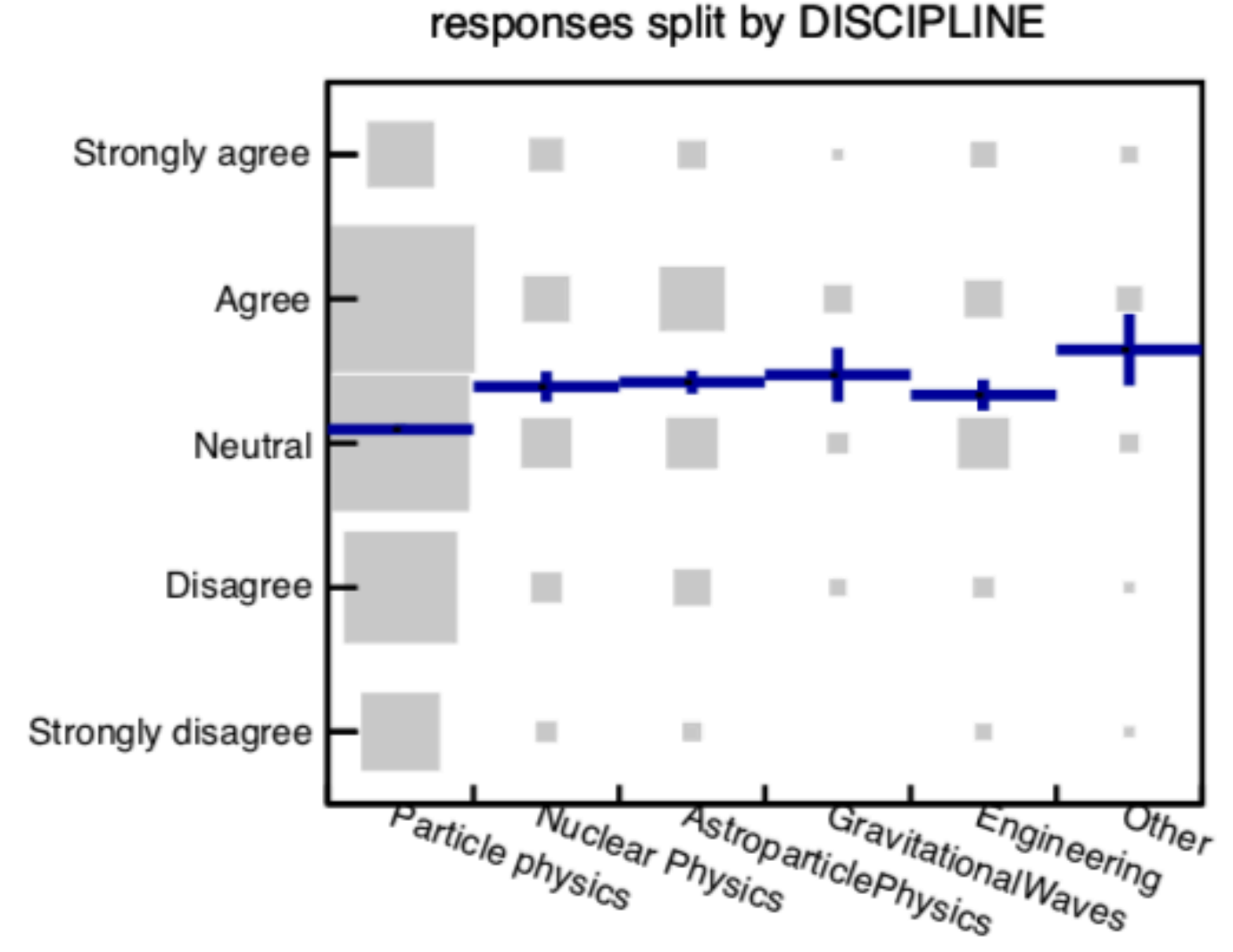
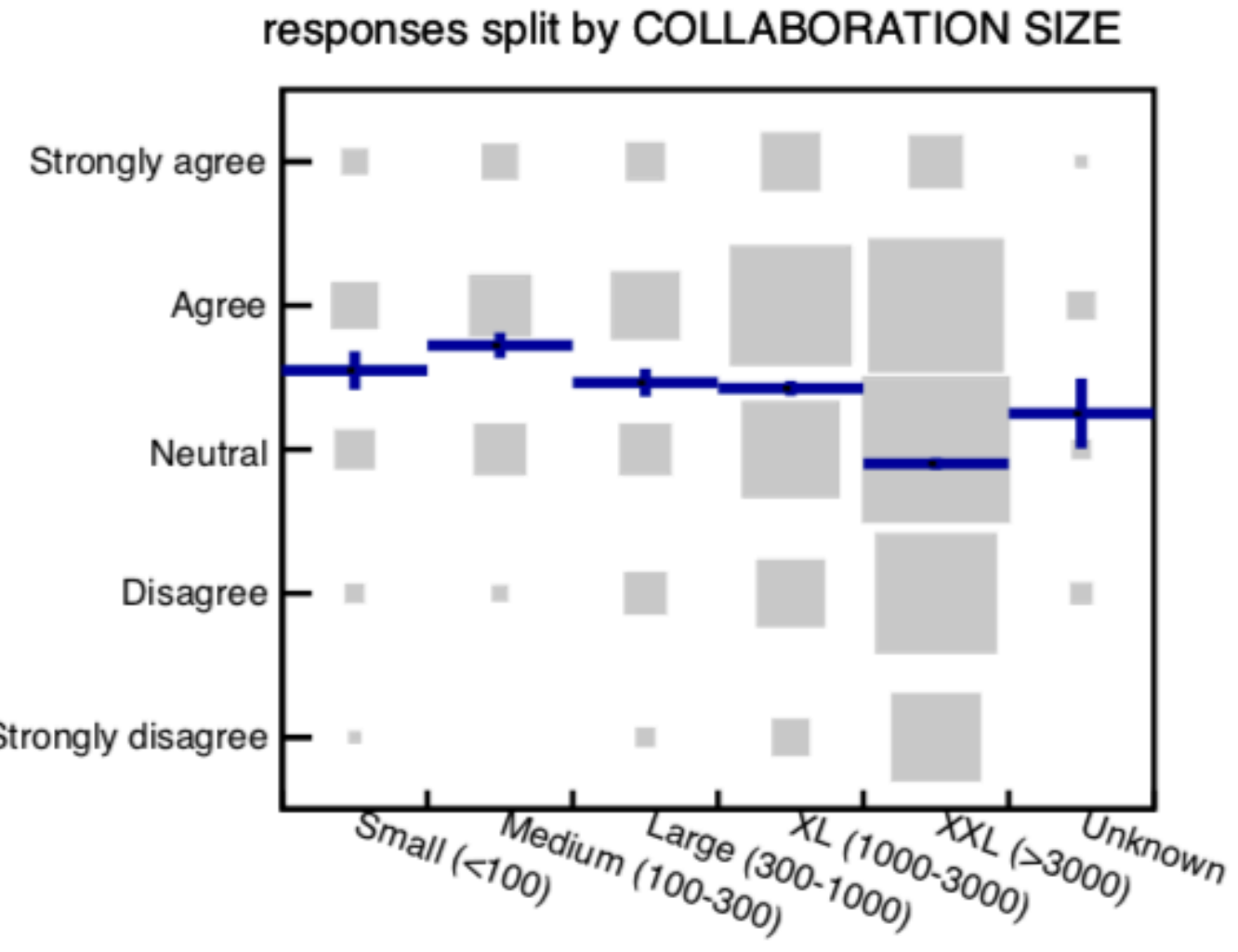
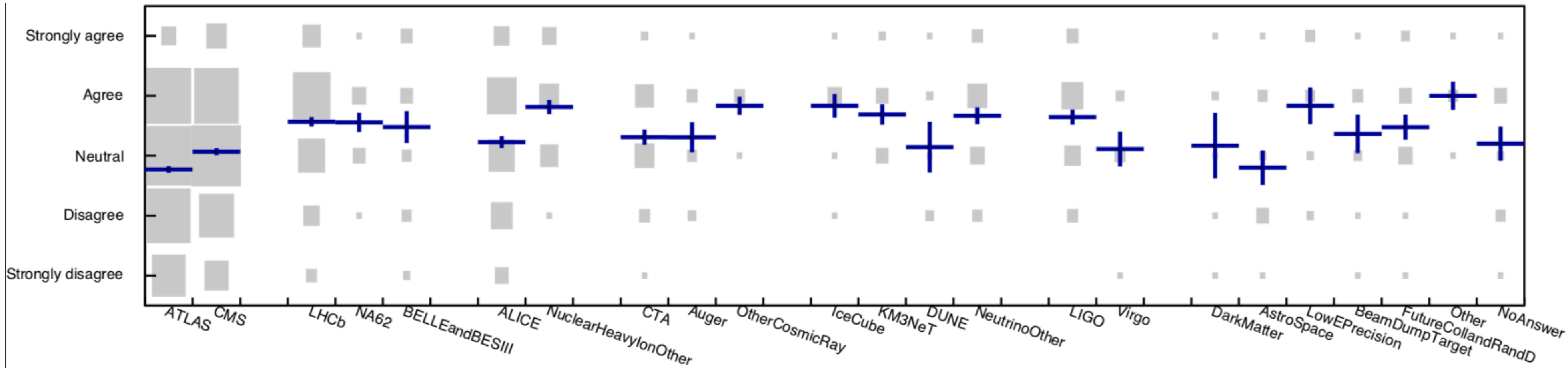
General plots

- Box size corresponds to the number of responses
- Shown is calculated mean with its stat error
- Note that variation of mean lies in range $\sim -1, +1$
- Lot of information in the spread



CONFERENCE TALKS - 1

The collaboration guidelines for speakers at conferences allow me to be creative and demonstrate my talents



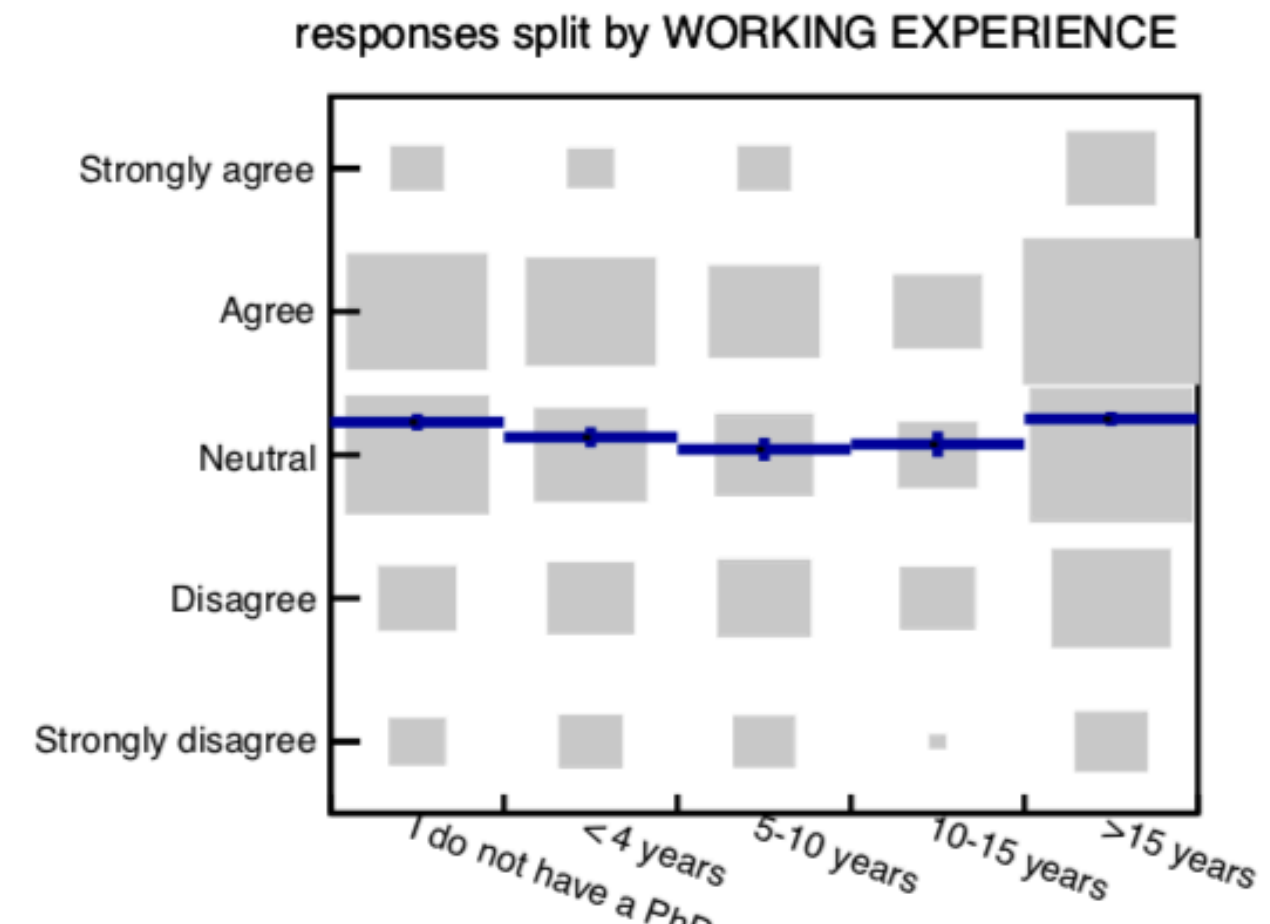
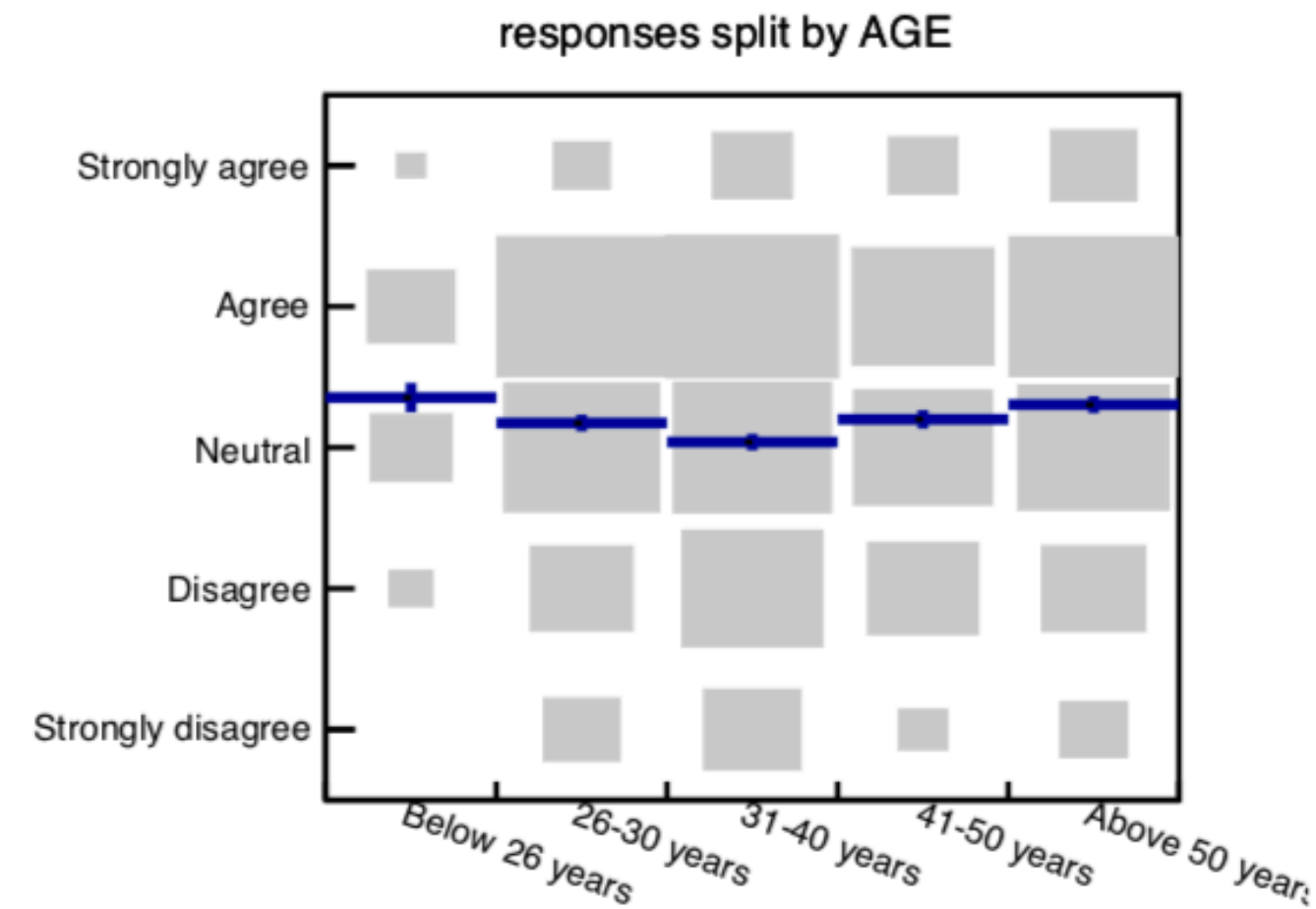
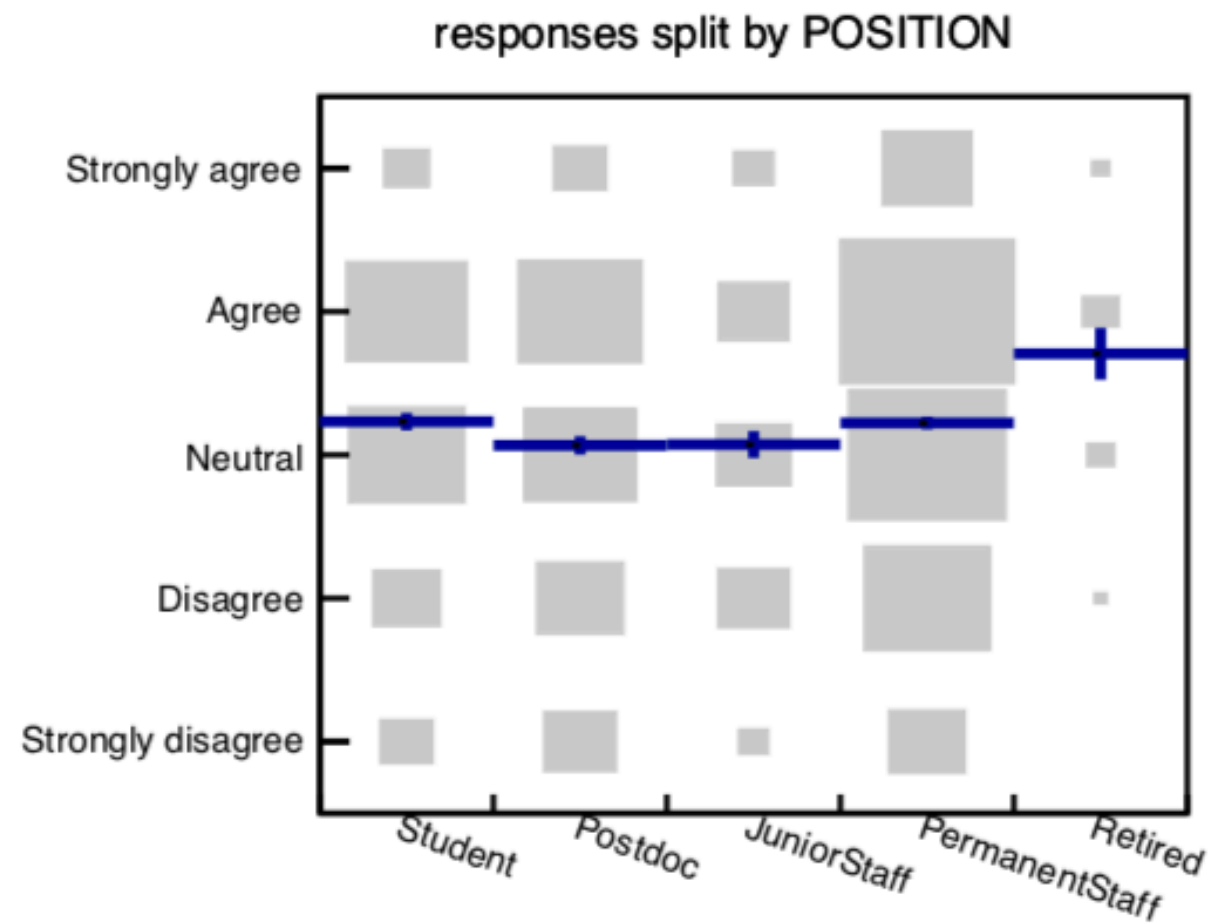
Significant variations observed:

- Large collaborations agree less well to statement
 - E.g. clear difference ATLAS and LHCb
- people tend to disagree to the statement if the collaboration gets larger
- Quite a few negative scores
- More an issue in Particle Physics than in other fields



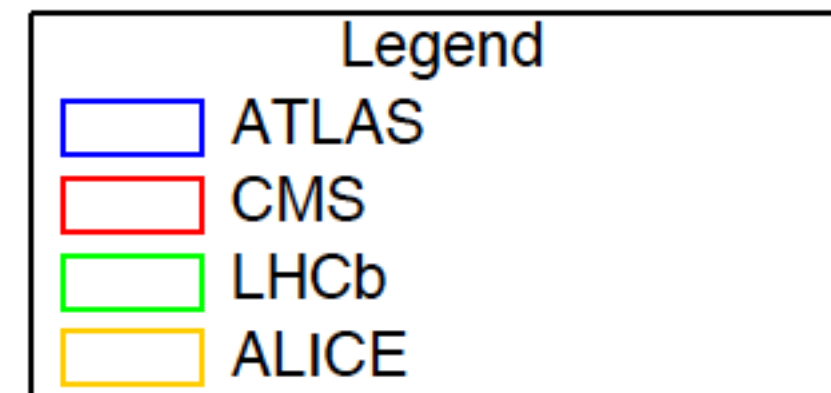
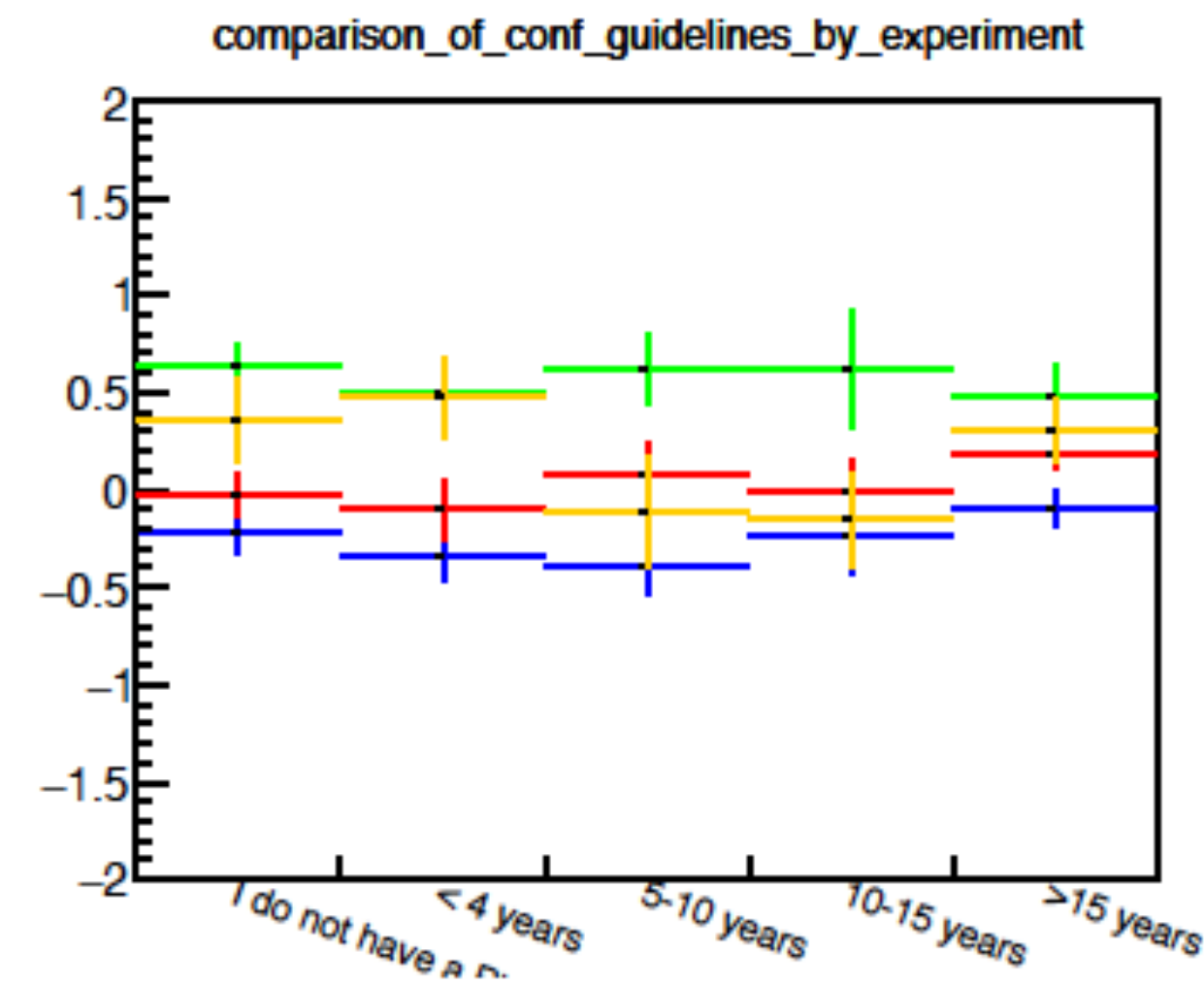
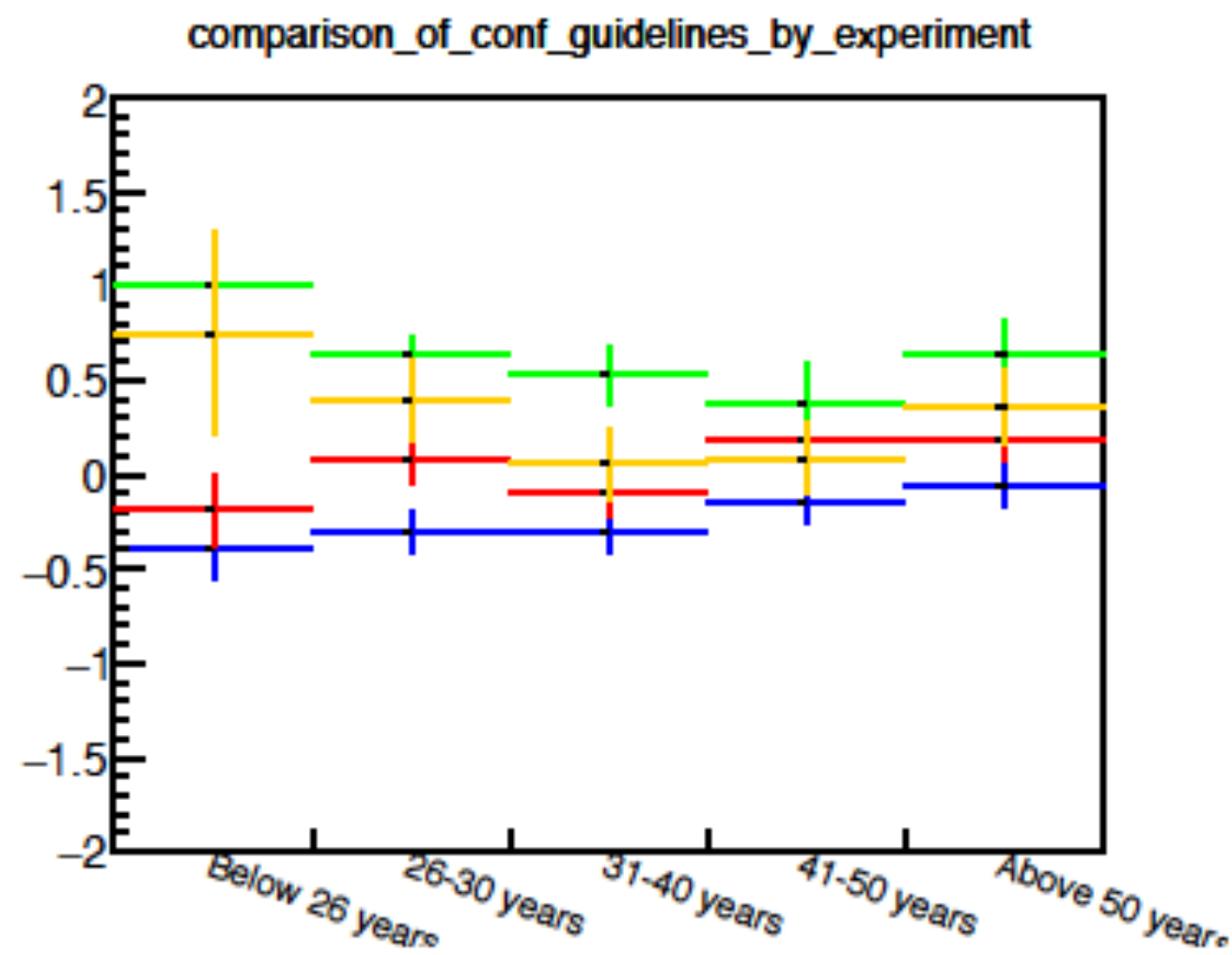
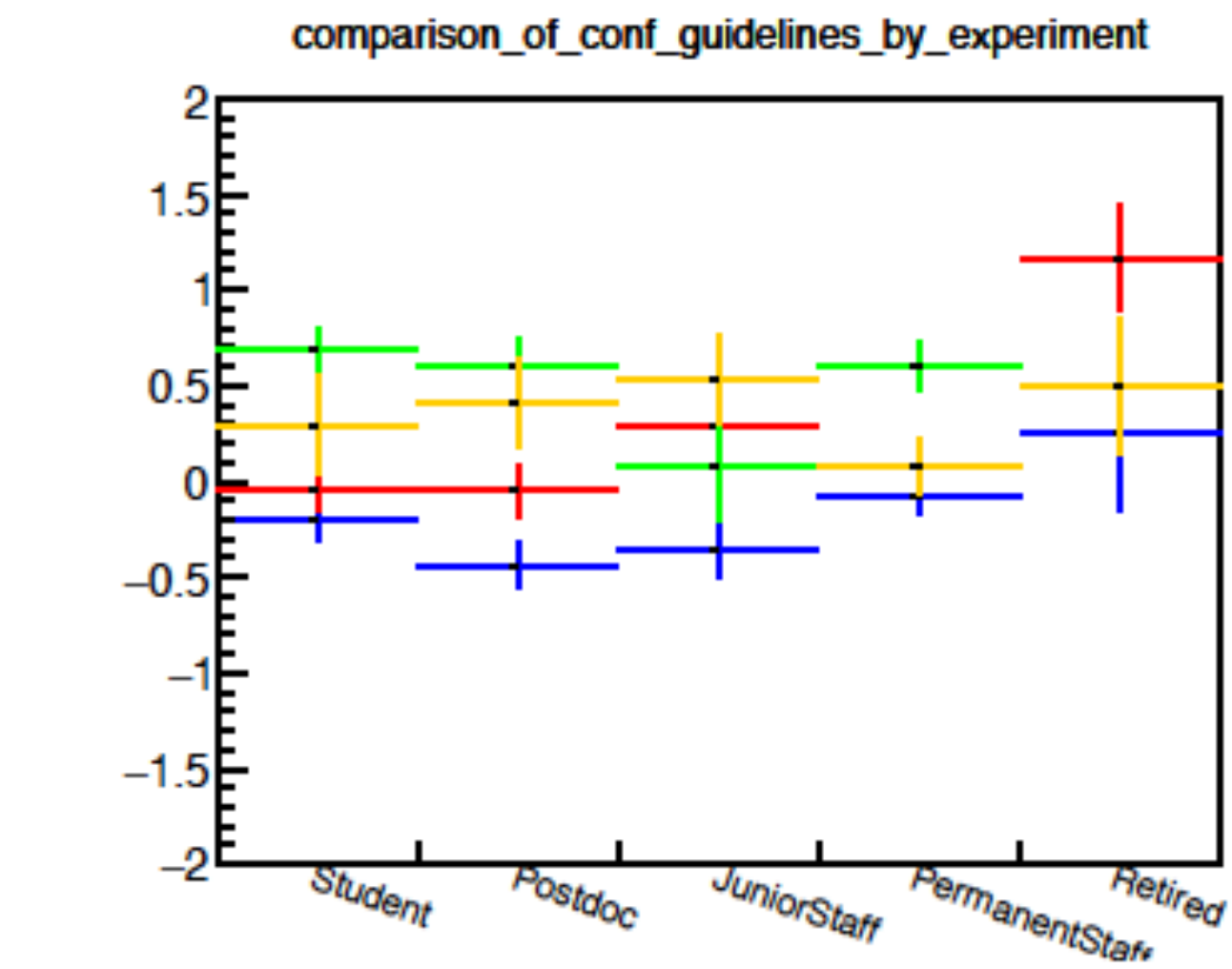
CONFERENCE TALKS - 1

The collaboration guidelines for speakers at conferences allow me to be creative and demonstrate my talents



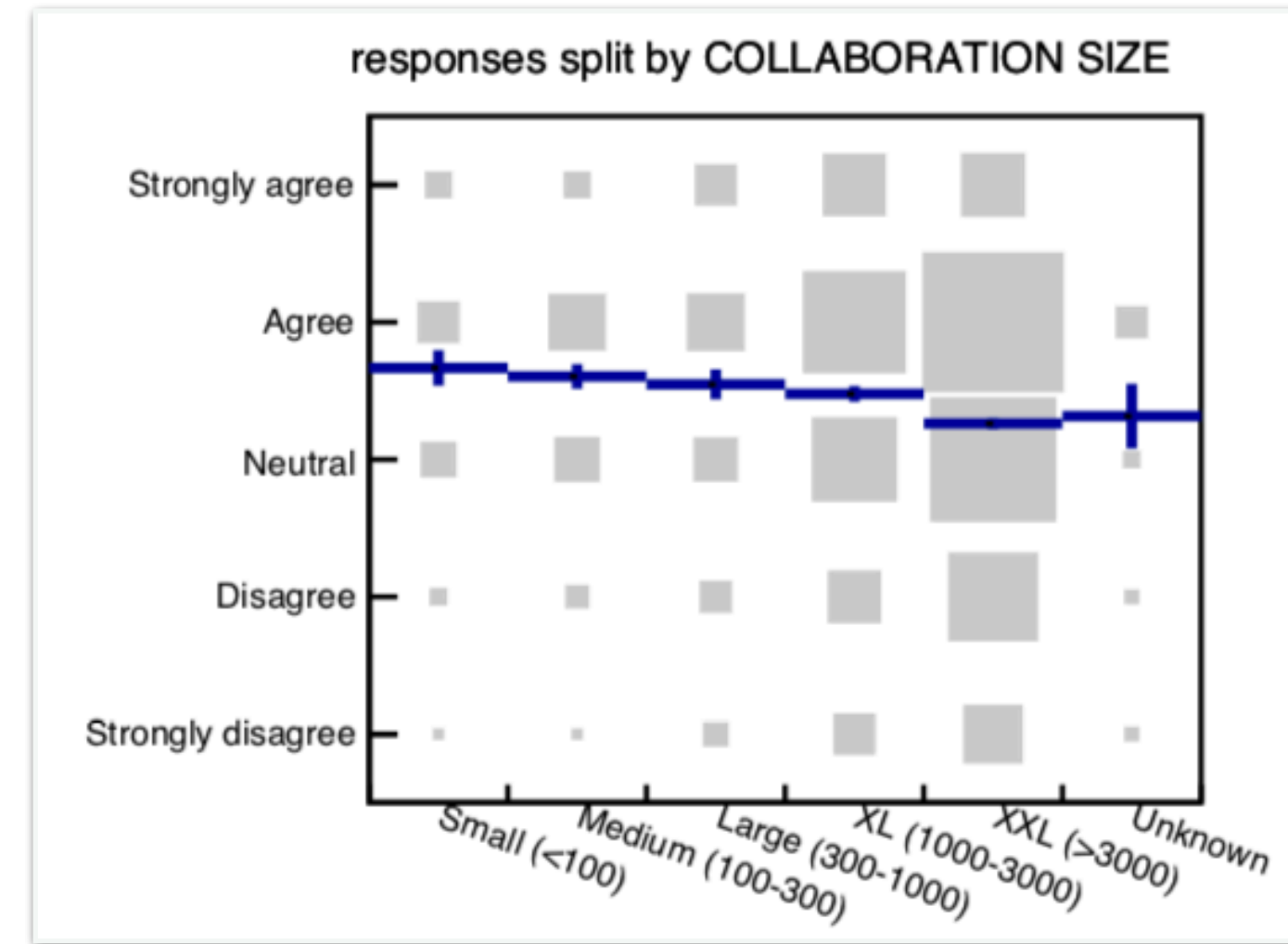
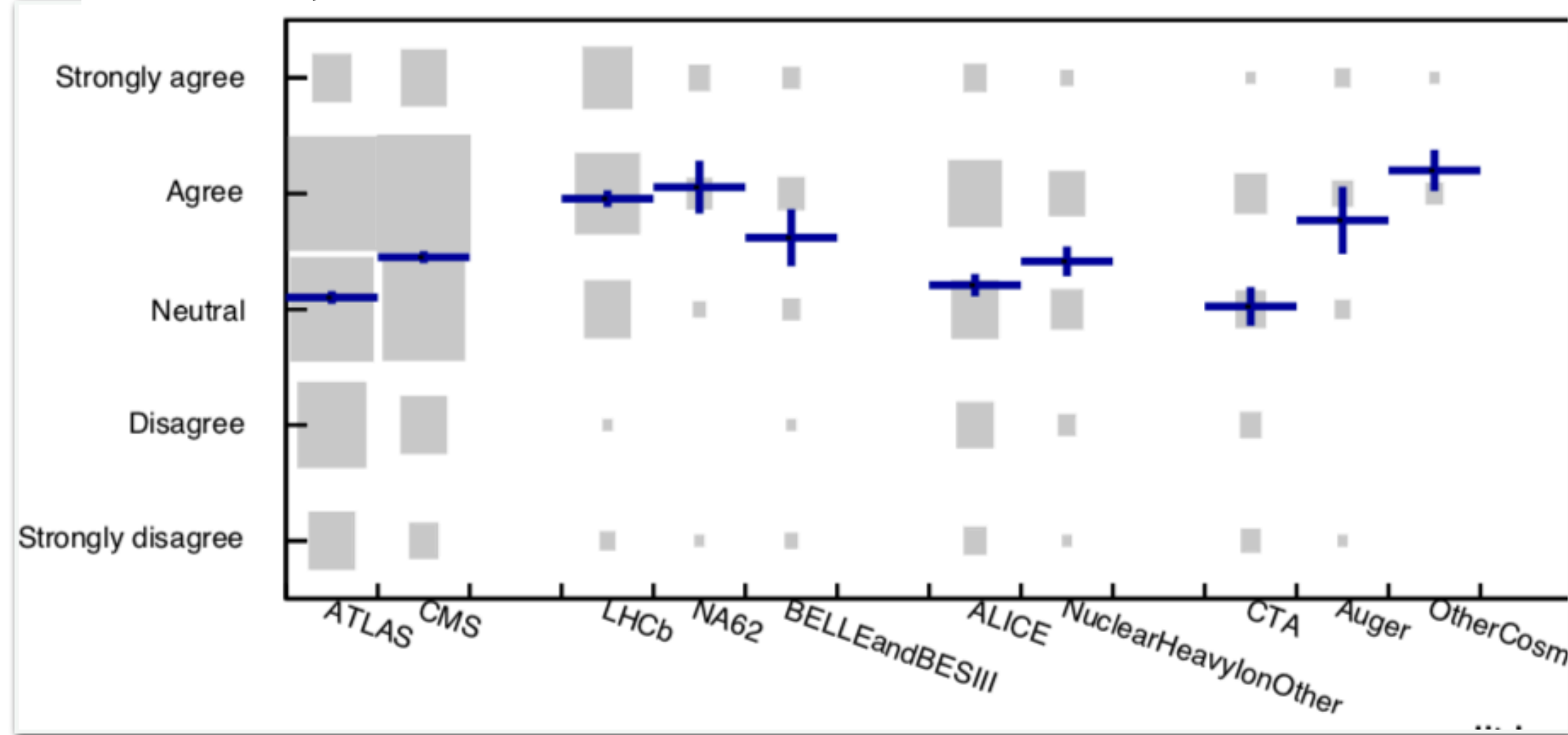
Disagreement largest for postdocs and junior staff

Large differences observed between the LHC experiments - for all stages in career



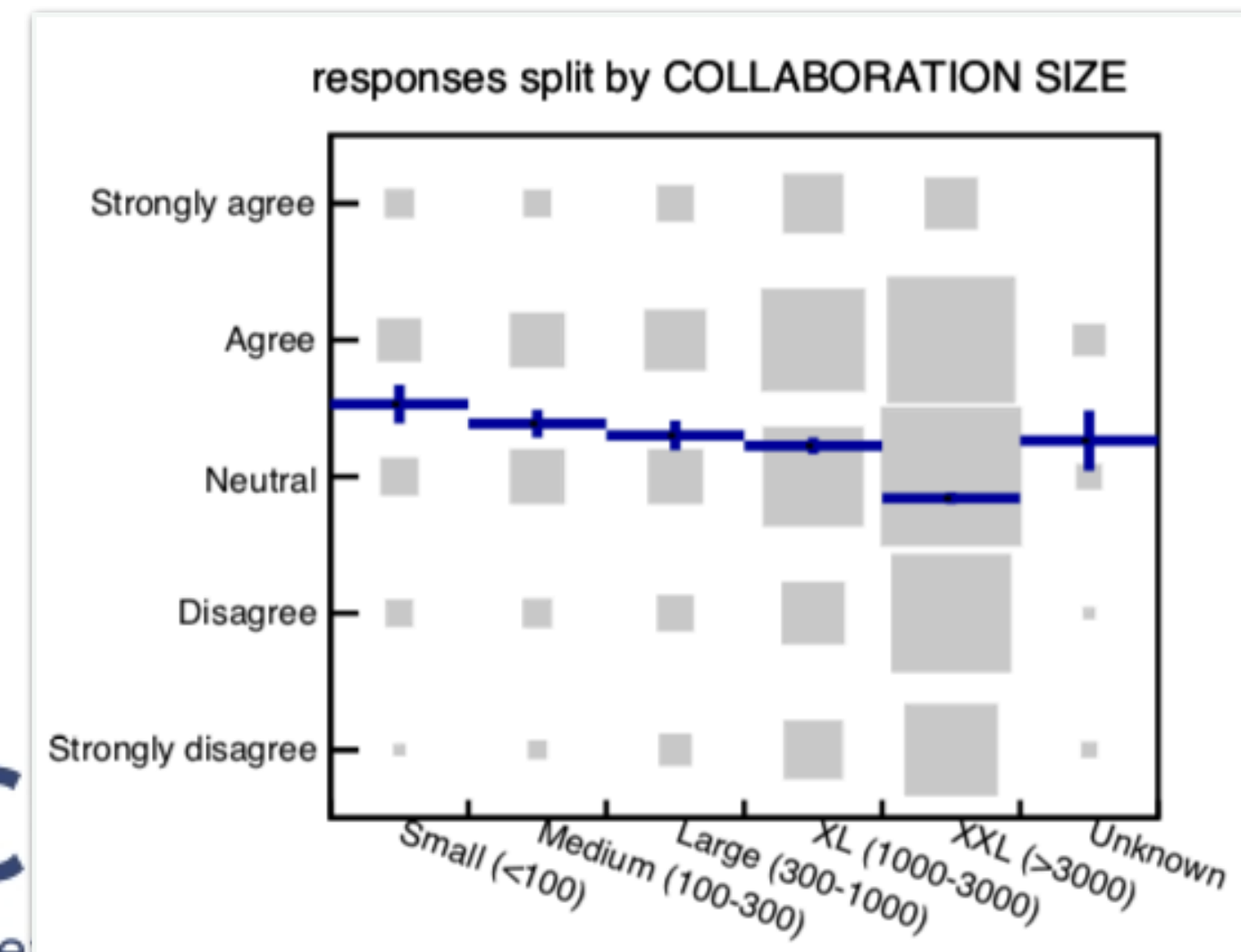
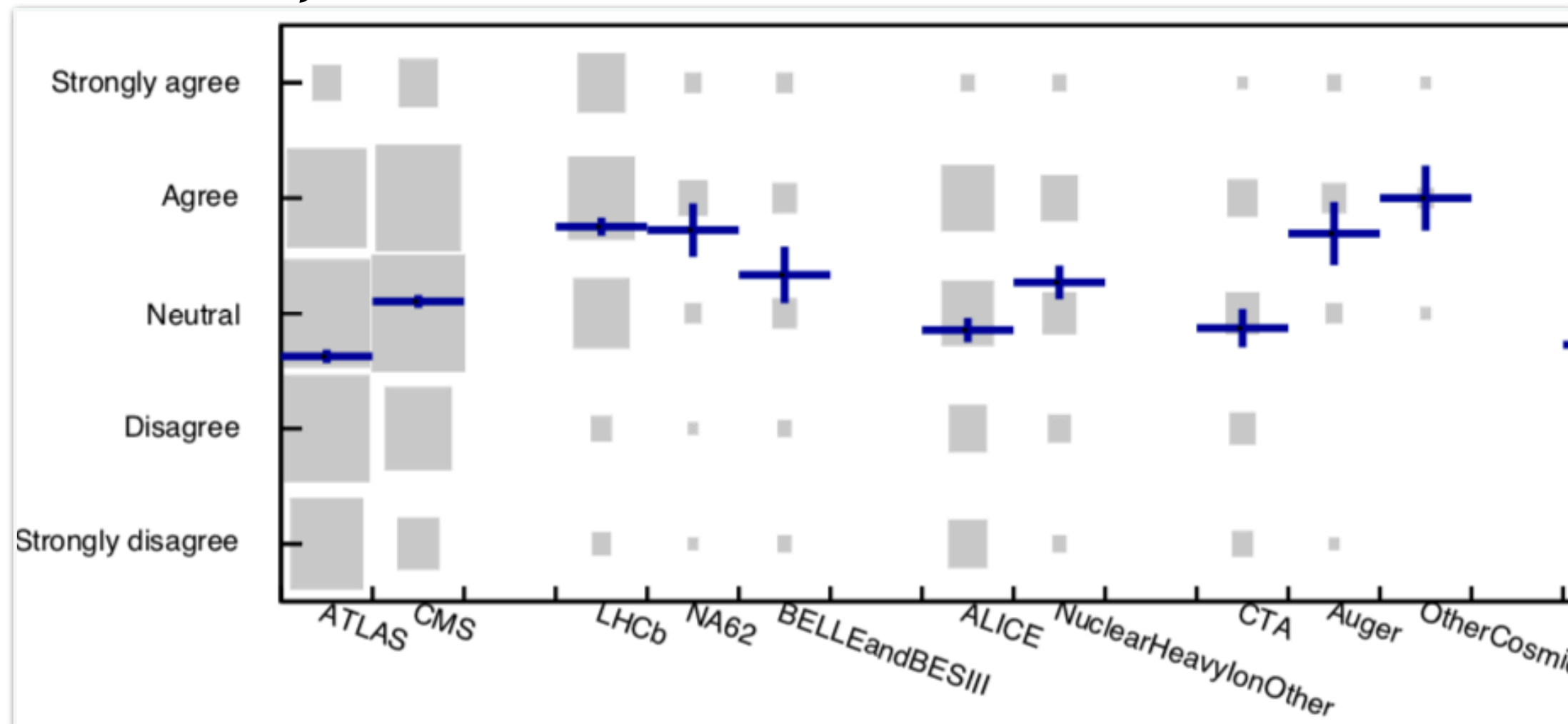
CONFERENCE TALKS - 2

Overall, I am allocated a fair number of conference talks on behalf my collaboration

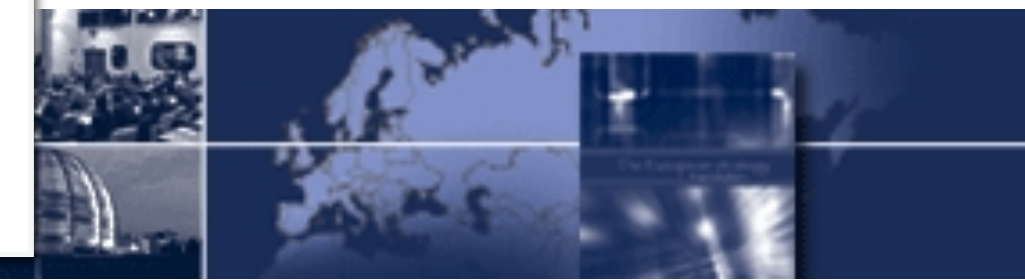


Wide spread in these distributions for LHC experiments
Note that the box 'strongly agree' is rather empty

Overall, I am allocated a fair number of talks at major conferences on behalf of my collaboration

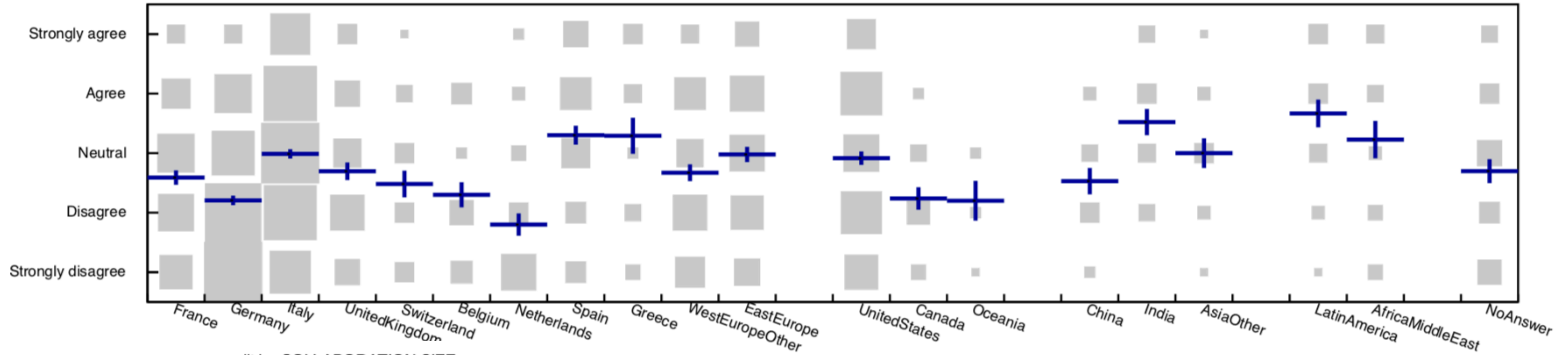


Large collaborations perceive less fair conference talks at major conferences with large spread

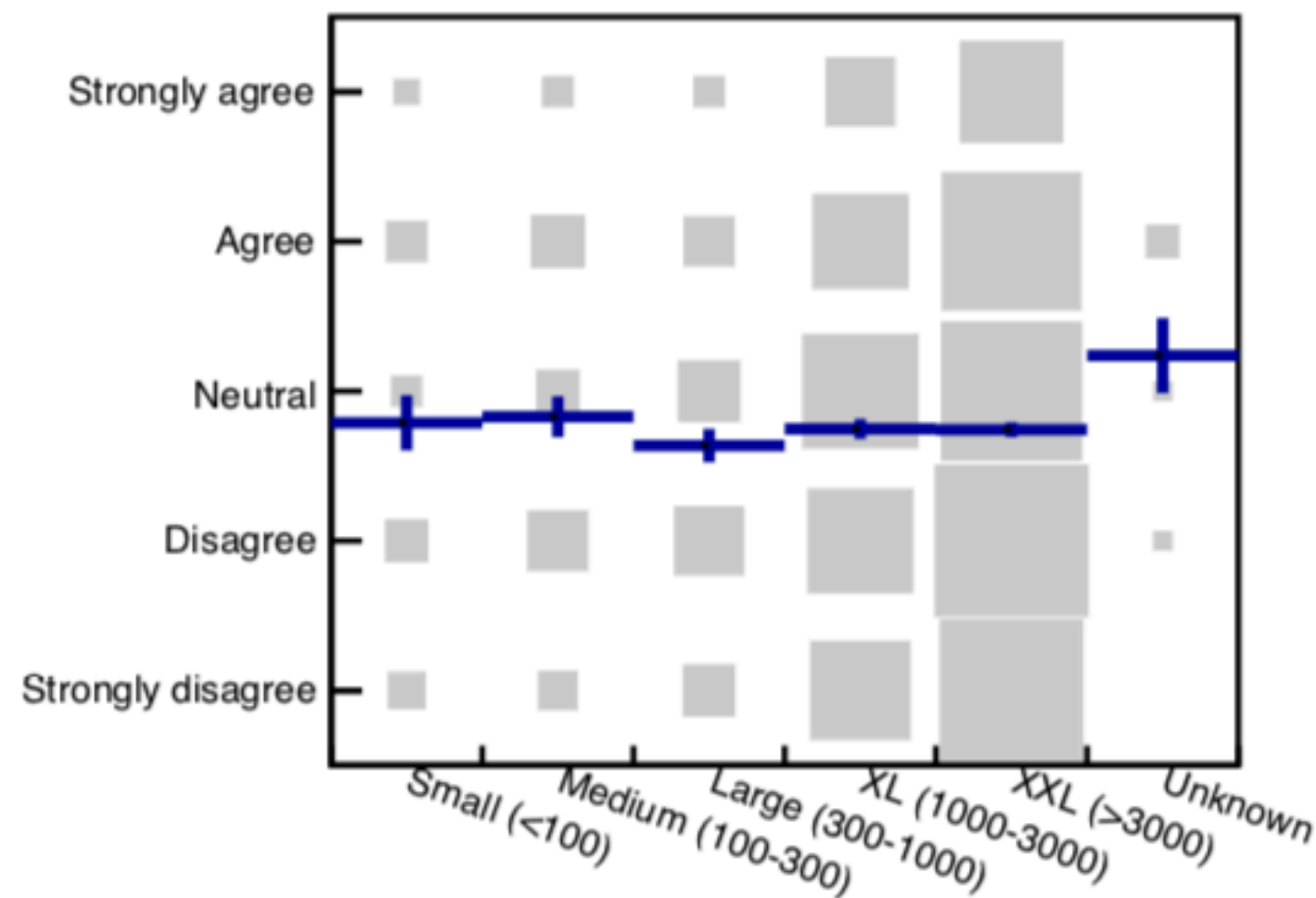


CONFERENCE TALKS - 3

I worry about financial issues for conference talks · split by COUNTRY



responses split by COLLABORATION SIZE

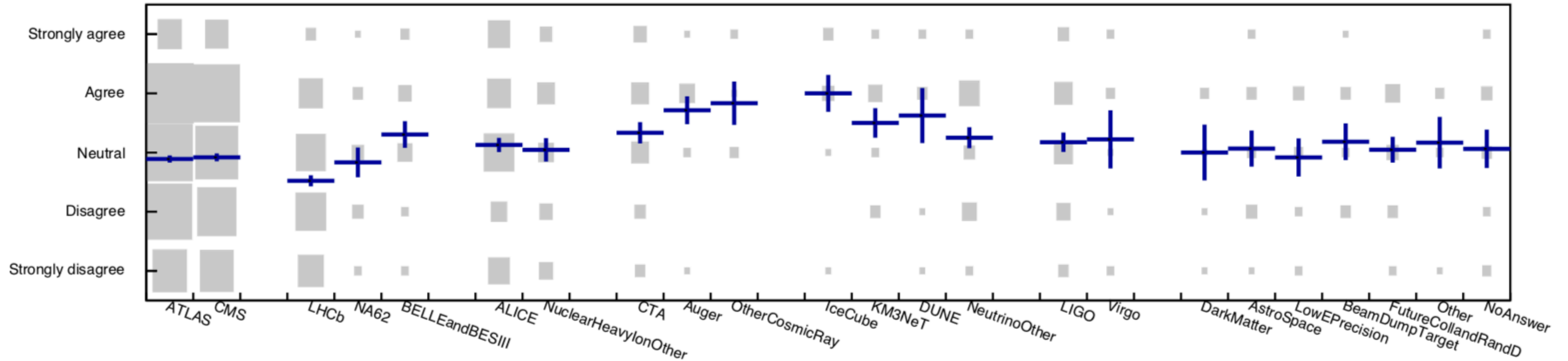


Financial issues show a fairly wide distribution - a fraction of people really worry
 However, overall the community seem to be rich enough
 Differences between countries are clearly visible

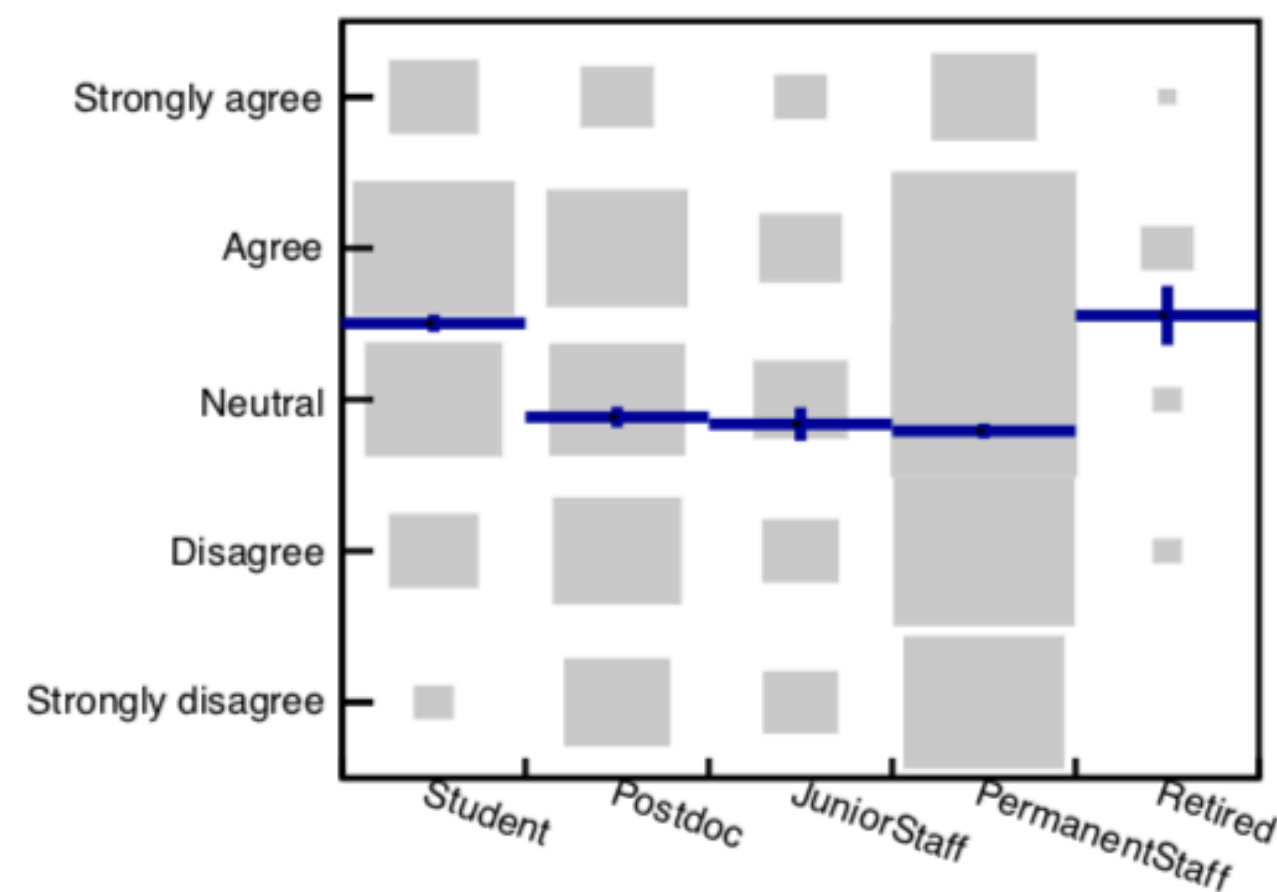


CONFERENCE PROCEEDINGS

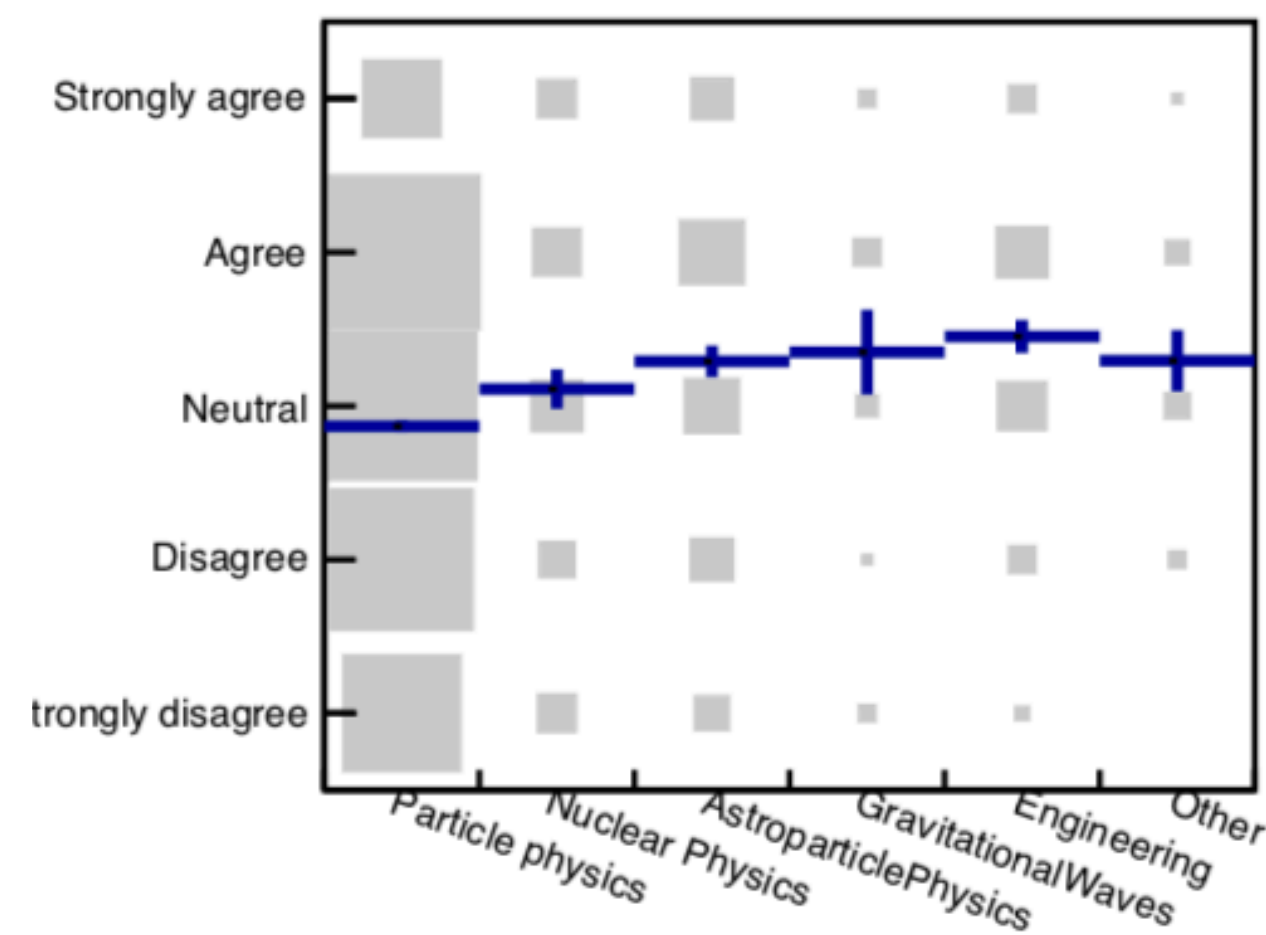
Conference proceedings are important for my academic career



responses split by POSITION



responses split by DISCIPLINE

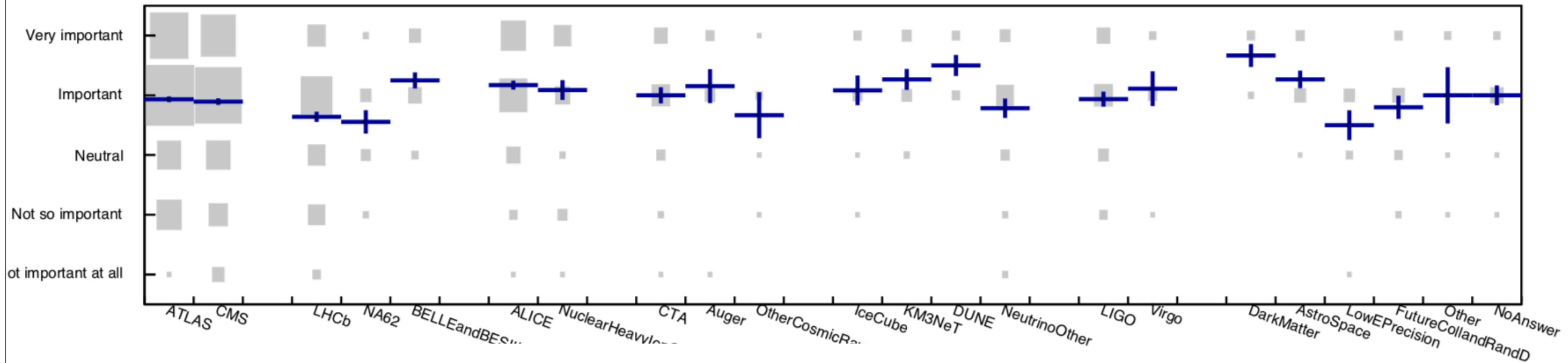


Importance of proceedings is fairly neutral, but spread is large. Students find it most important. In Particle Physics the importance is less than other fields.

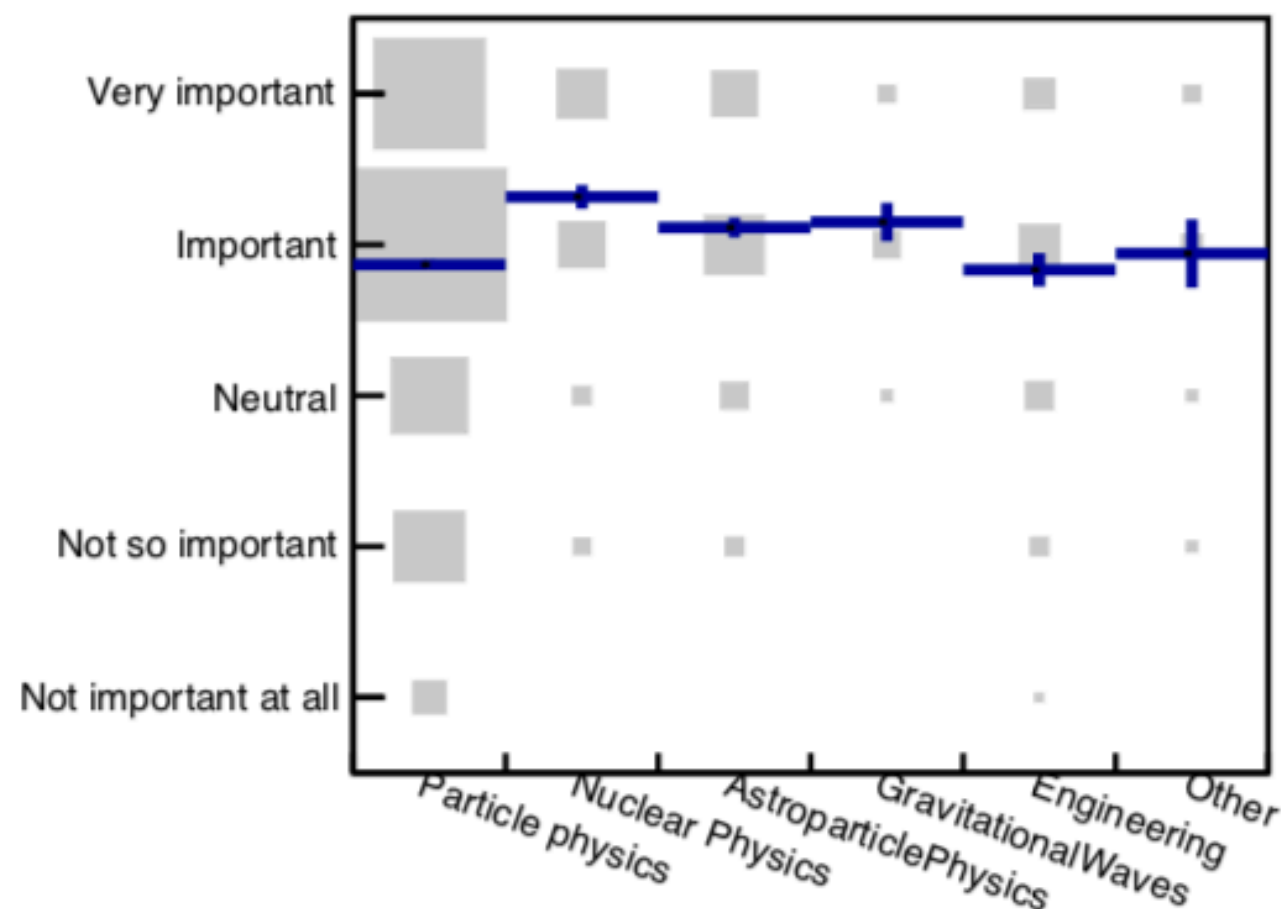


VERIFY SUCCES: CONFERENCE TALKS

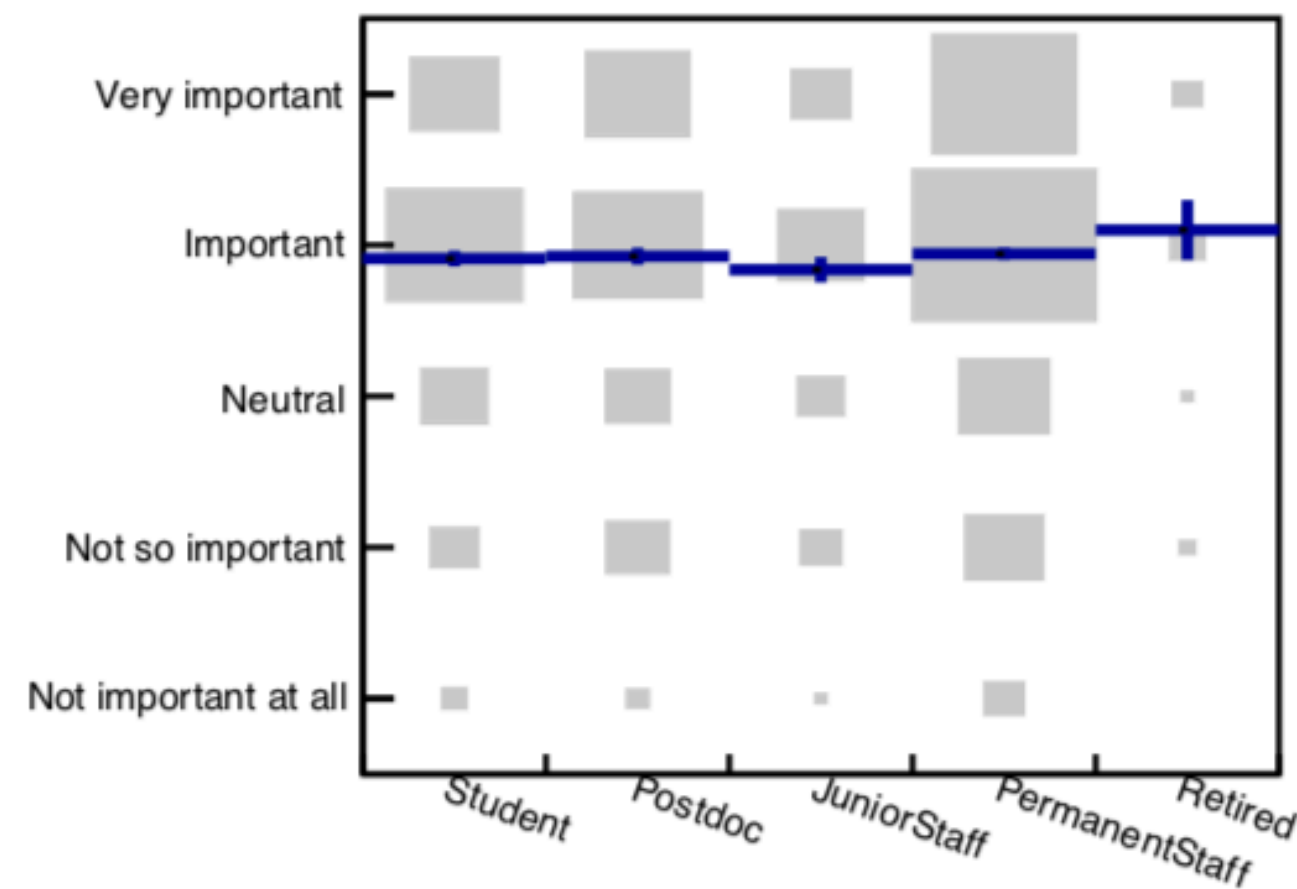
**According to me the following aspects are important to verify the success of a scientist:
Being selected for conference talks**



responses split by DISCIPLINE



responses split by POSITION



Conference talks are considered to be very important to verify success as a scientist
Somewhat less for Particle Physics wrt other communities

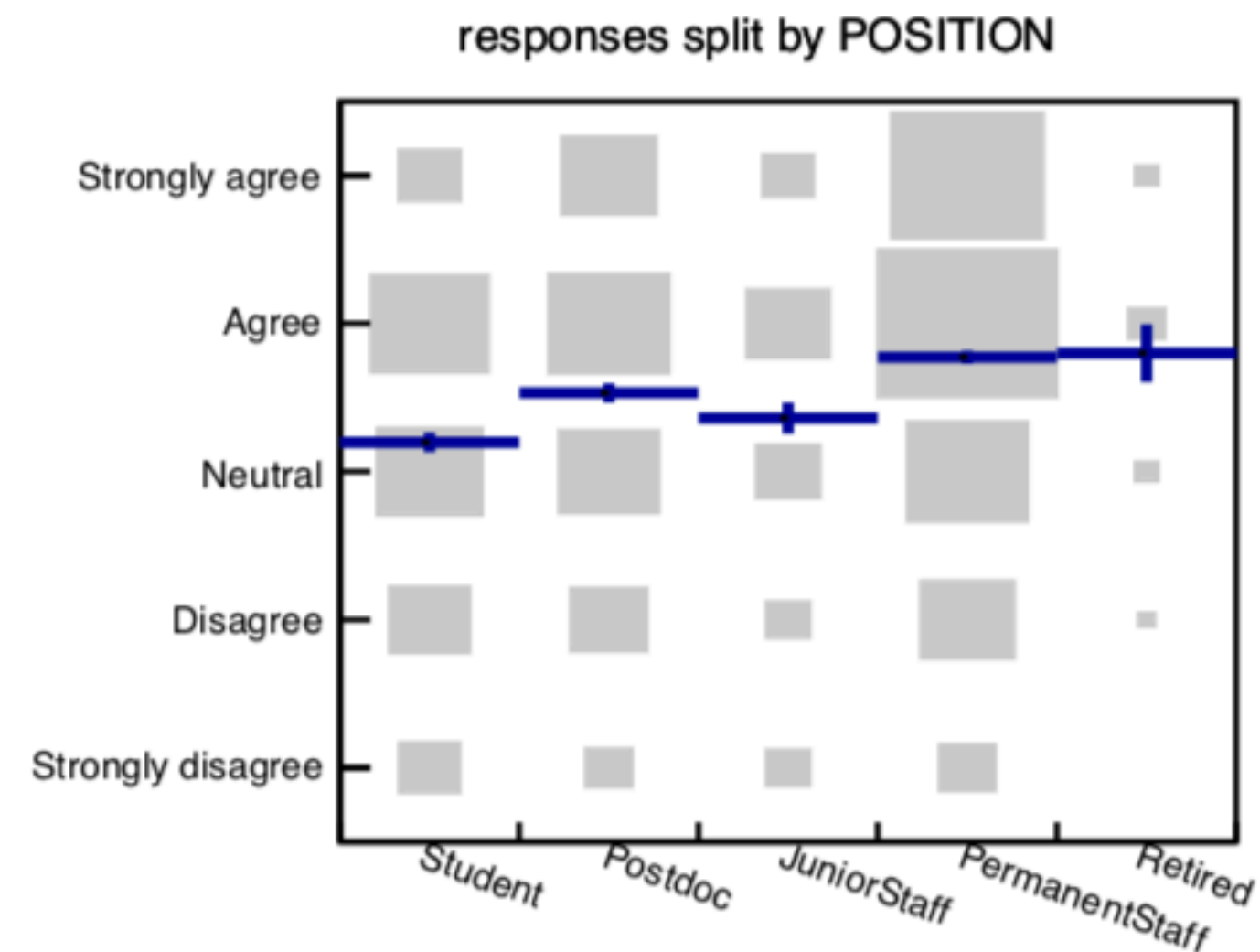
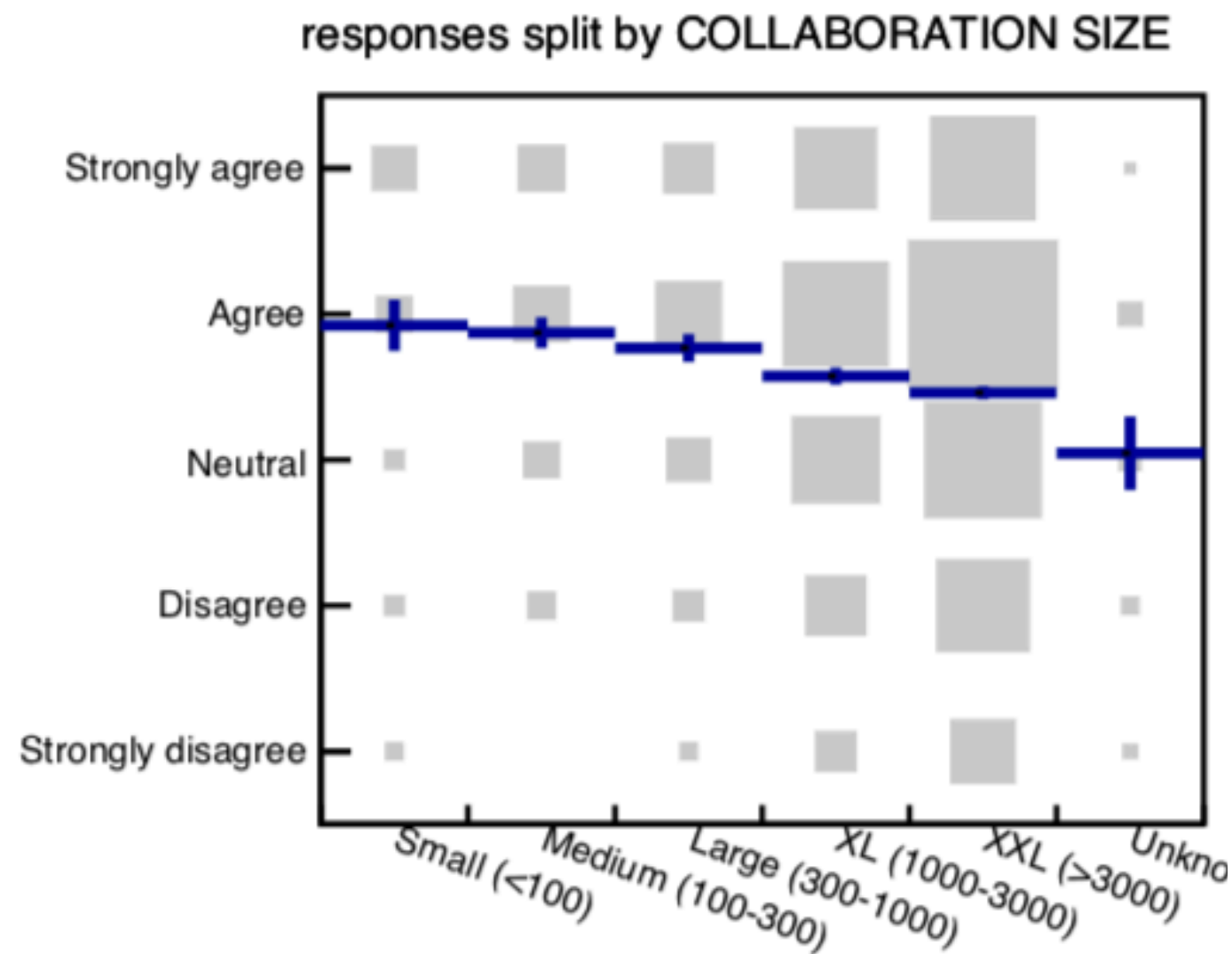


COLLABORATION PAPERS - 1

Which authorship system does your collaboration deploy?

● Alphabetic list of authors	1110
● Alphabetic list of authors, but with a sign-up system for each paper	72
● First author or first author group system	74
● Other	82

For me it is important to be included as author of all collaboration-wide papers



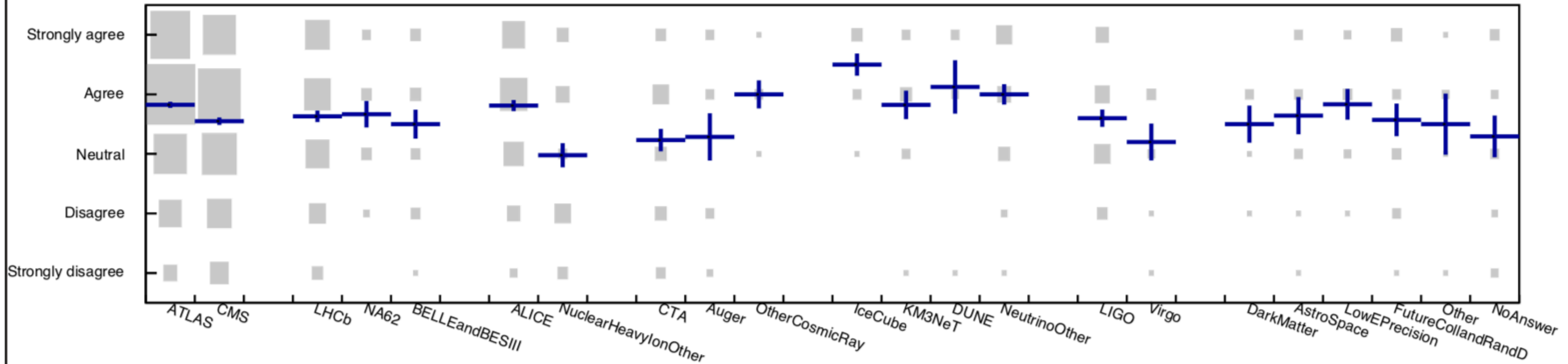
Current situation:

1. Most publications by alphabetic author list
2. It is important to be included as author (somewhat less in large collaborations)

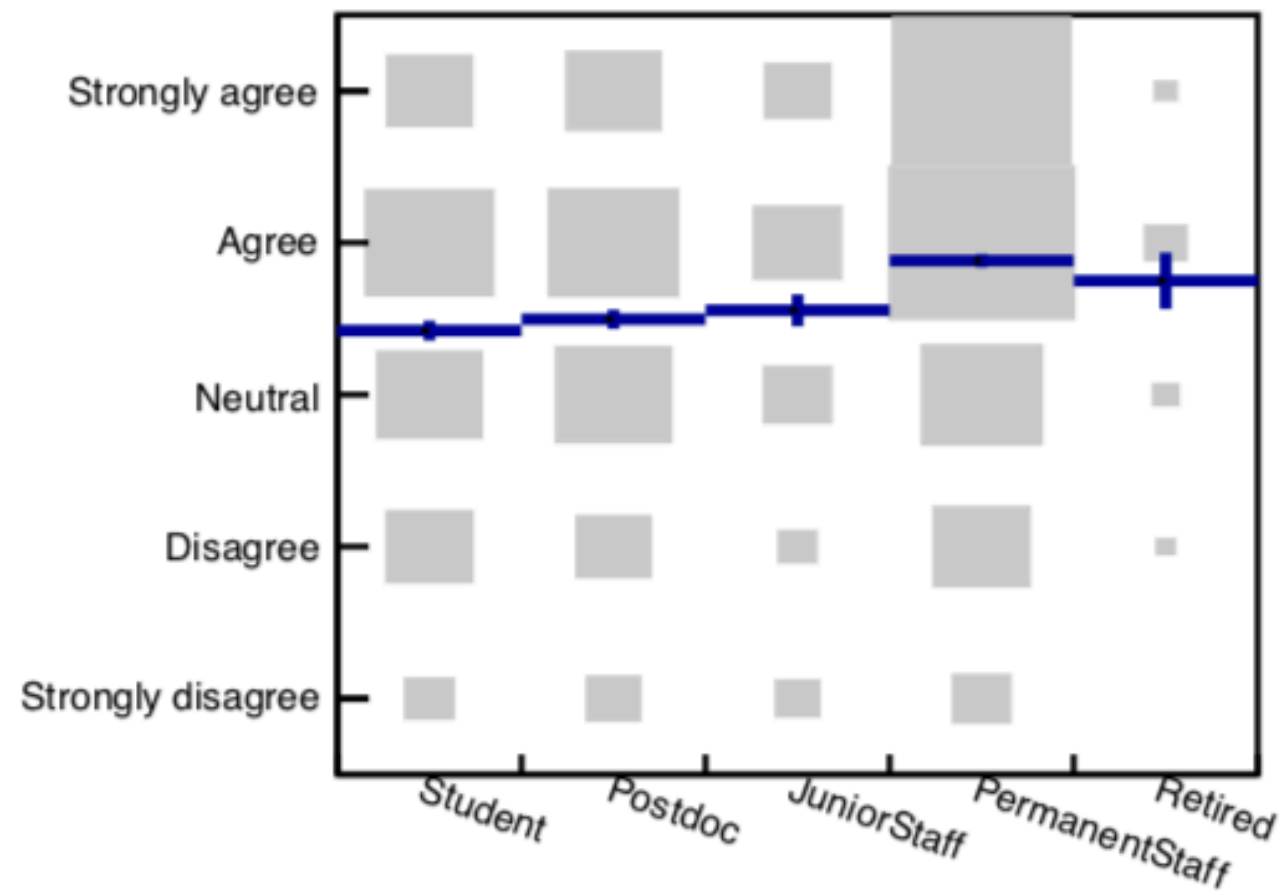


COLLABORATION PAPERS - 2

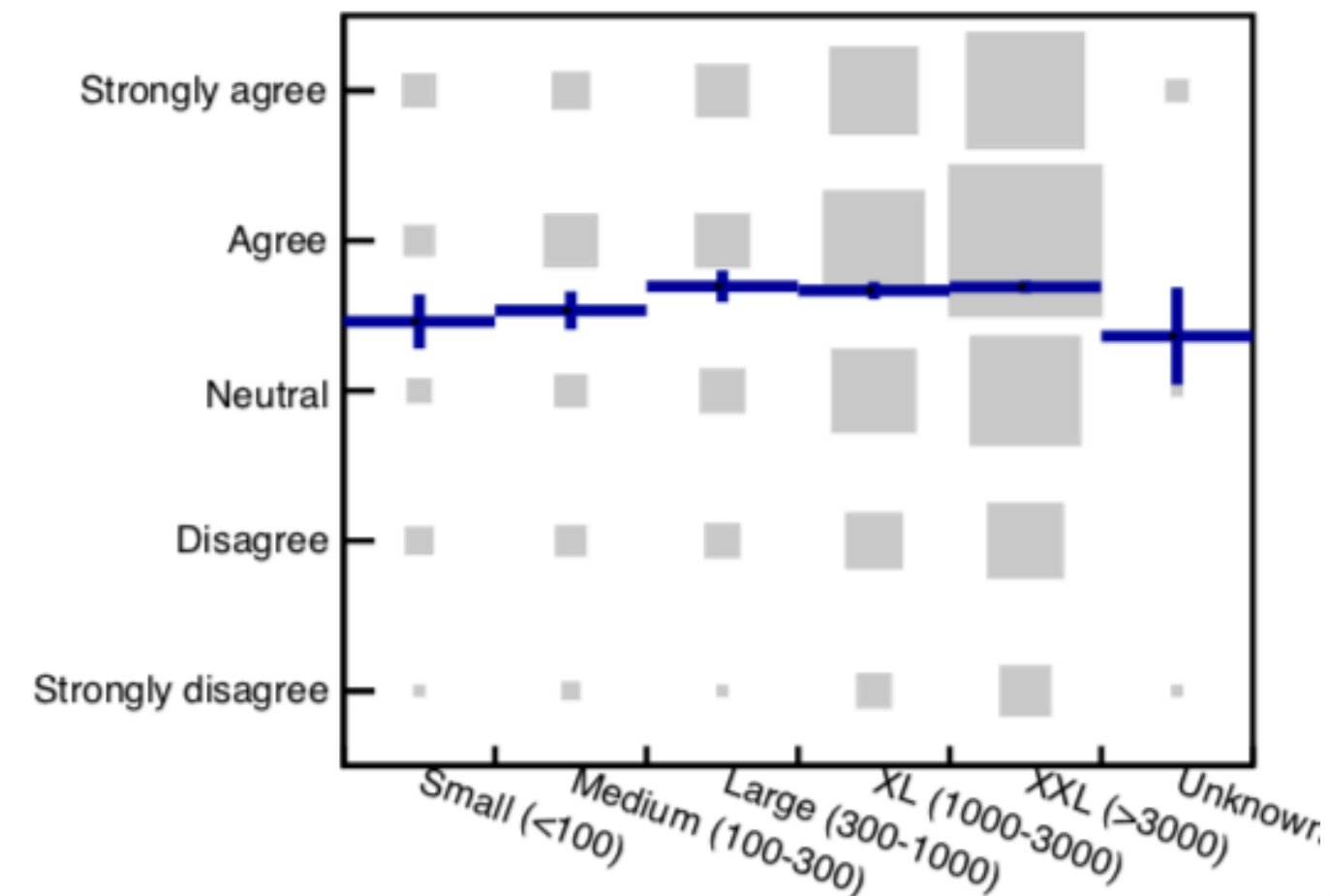
I support the alphabetic listing of all members of the collaboration for each publication



responses split by POSITION



responses split by COLLABORATION SIZE

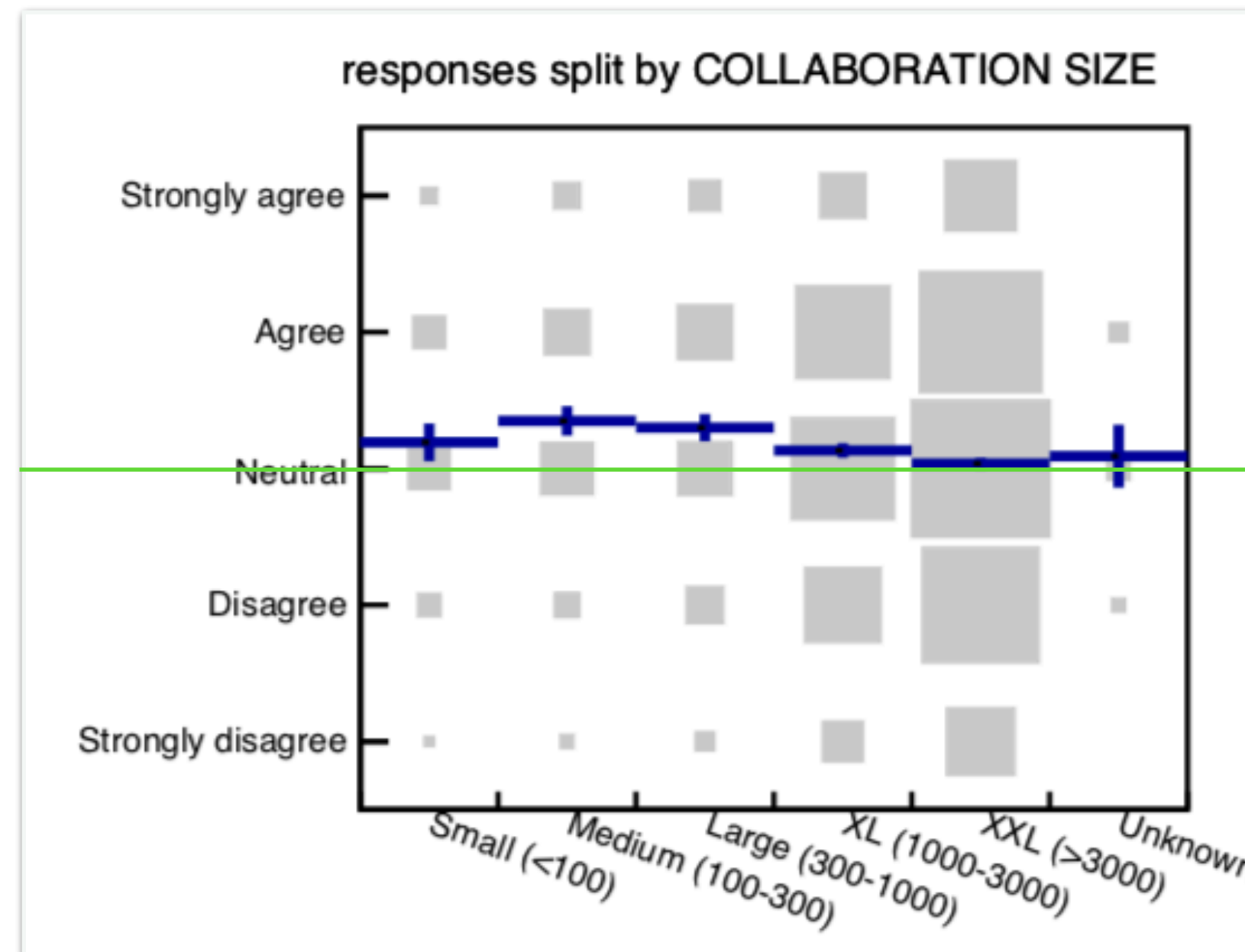


Perhaps the most important result and one of the surprises of this survey:
 Alphabetic ordering of the publications seems widely supported -
 - among all career stages
 (especially permanent staff agrees)
 - independent of the collaboration size
 Want to be recognized as member of collaboration

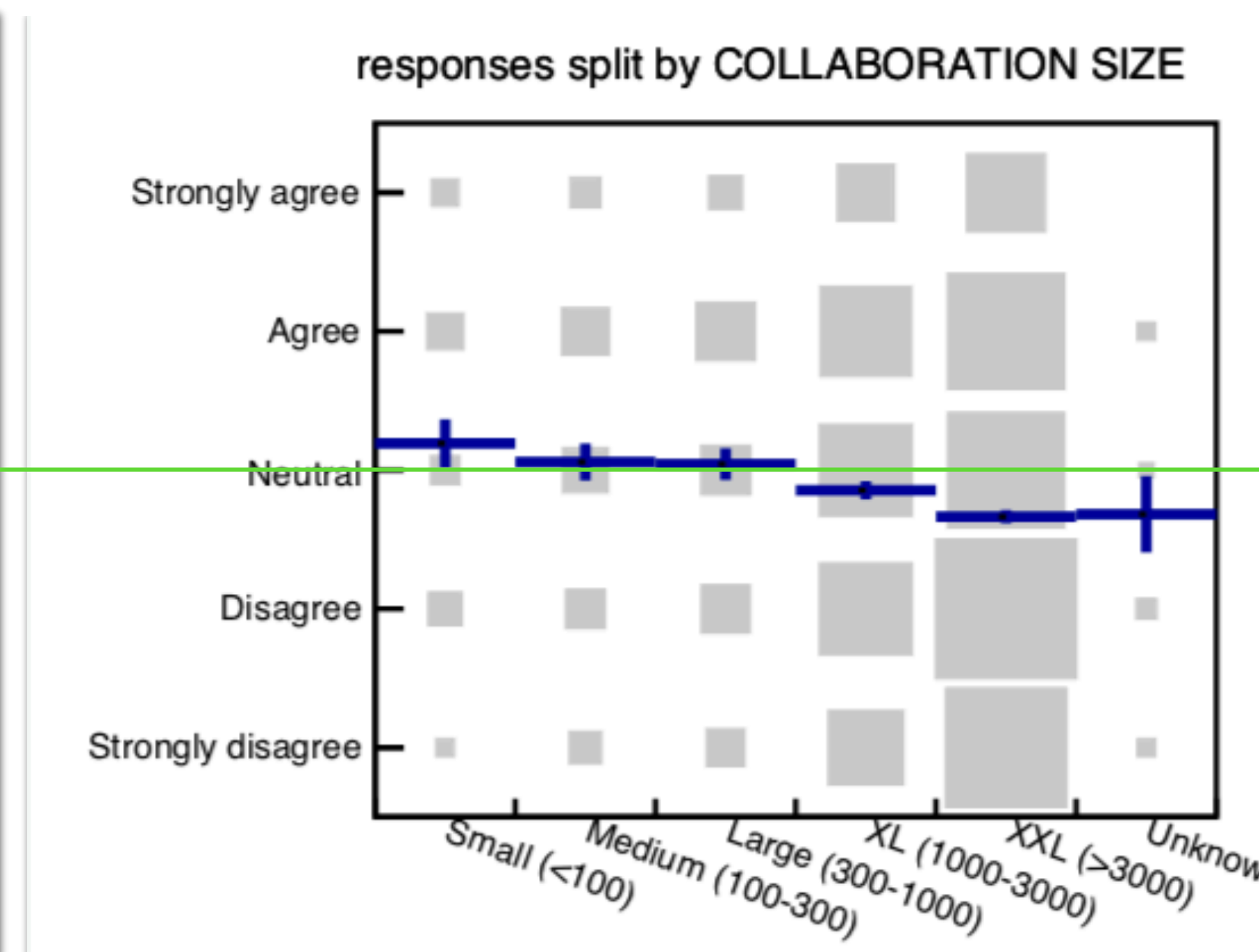


COLLABORATION PAPERS - 2

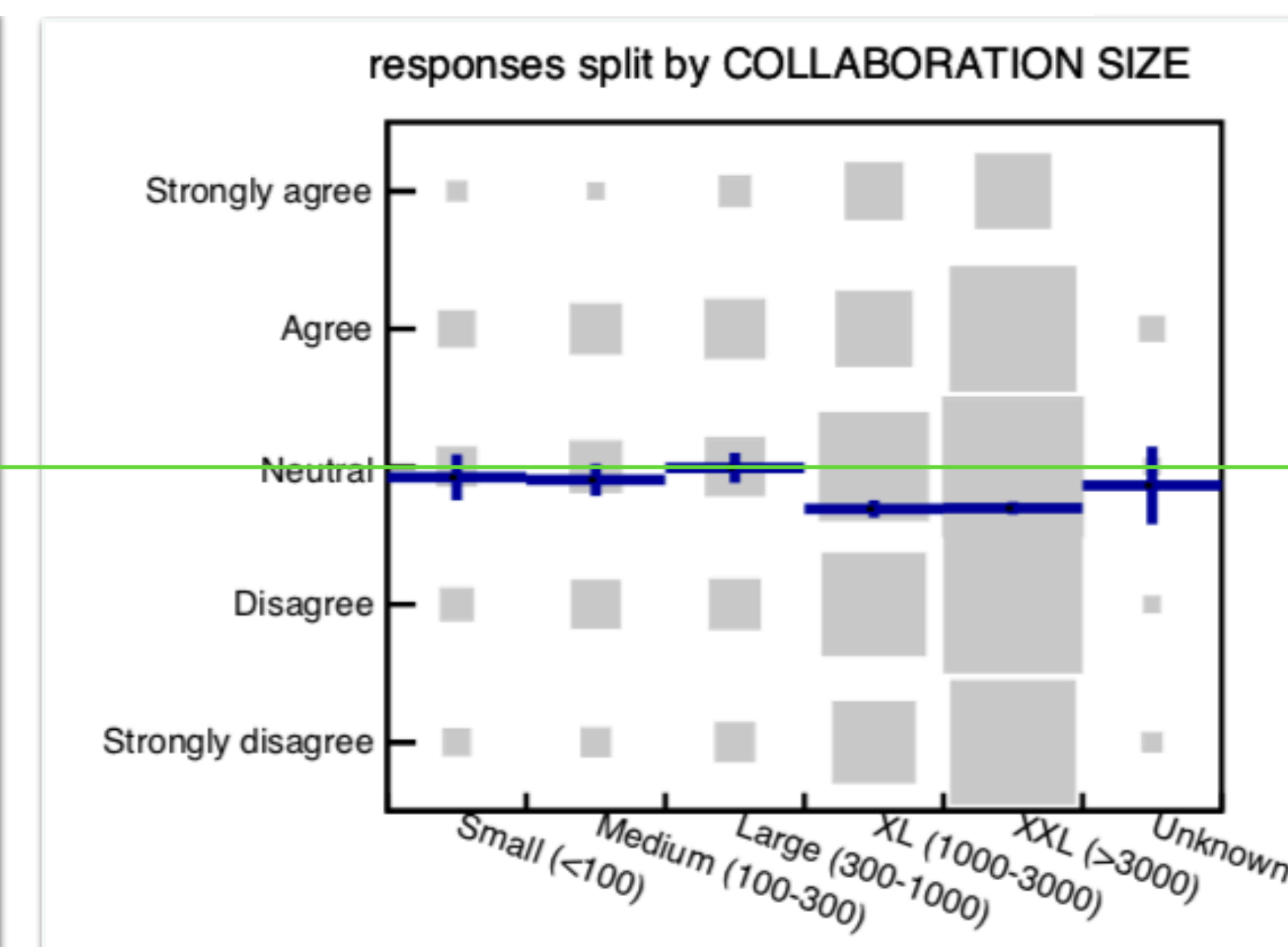
2. **Additional to the simple alphabetic listing, a sign-up system is to be added where each member of the collaboration can take the responsibility to sign a publication**
3. **Compared to the alphabetic listing, a better alternative would be a system using a first-author group**
4. **Compared to the alphabetic listing, a better alternative would be to have pre-defined publications that initially motivated the experiment to be signed by all members of the collaboration, and other publications with a shorter list of authors**



Sign-up system for authors



First author group



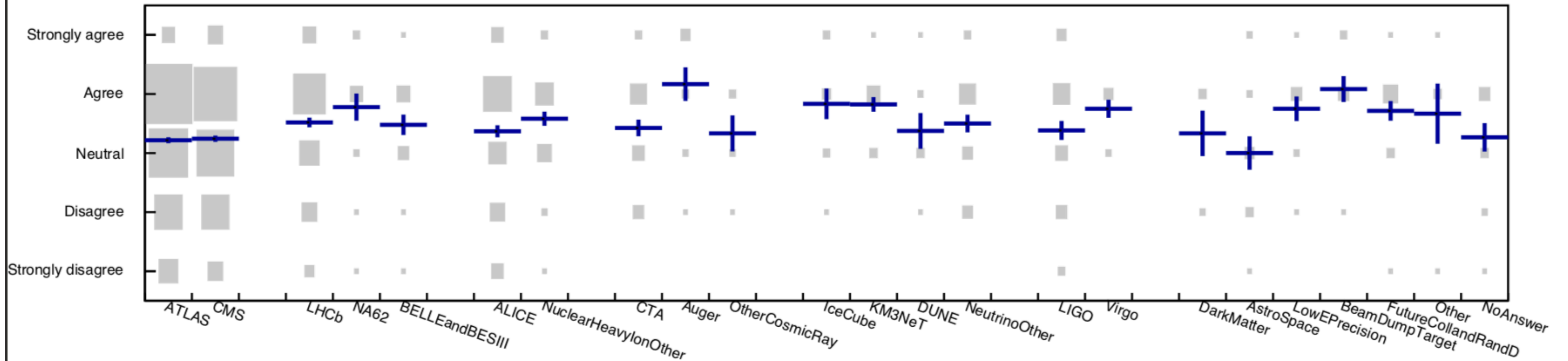
'less important' papers by short author list

The community seems very divided
No good alternative for alphabetic ordering of authors

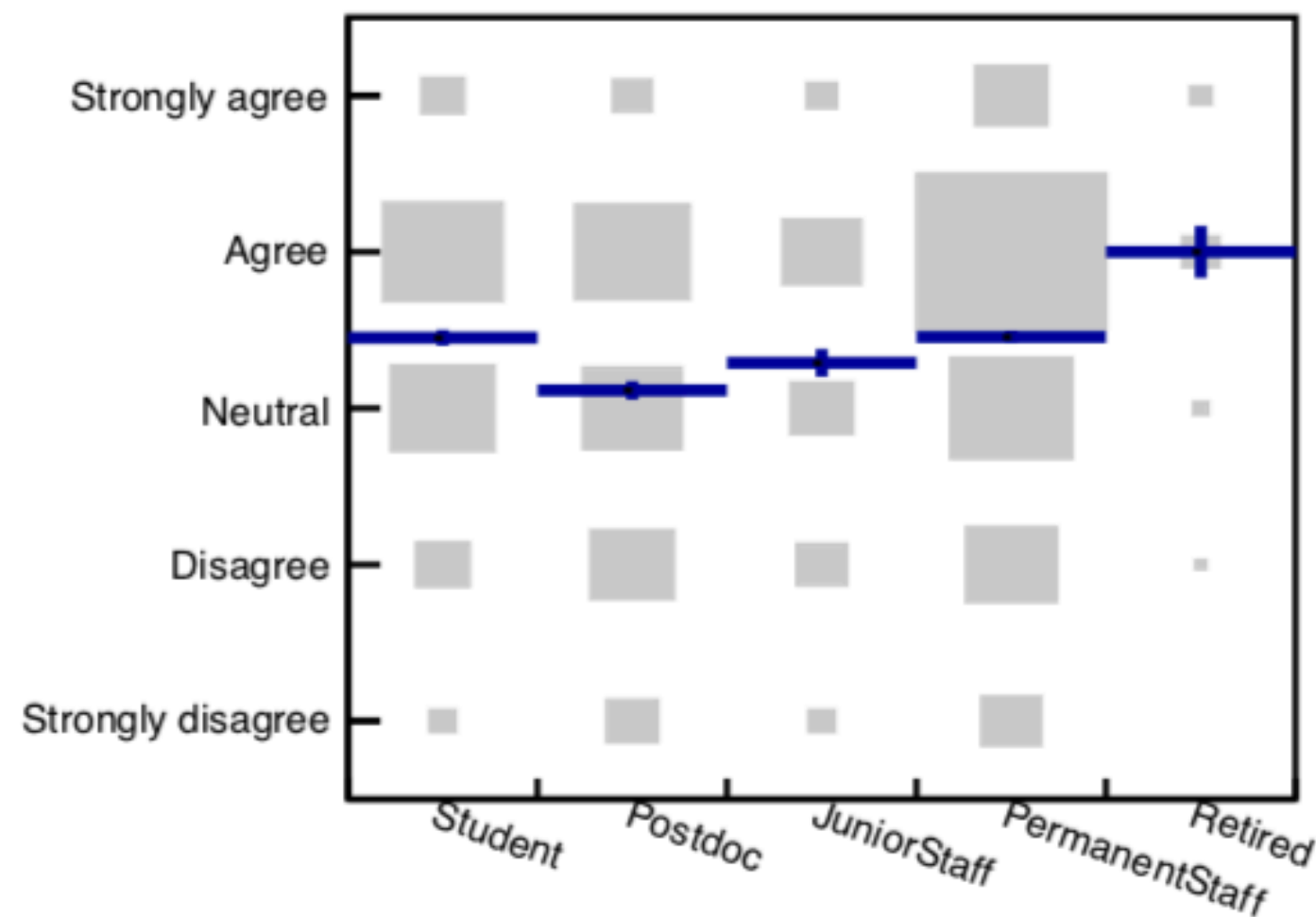


ASSIGNED RESPONSIBILITY IN SCIENTIFIC COLLAB -1

I perceive the assignment of positions with responsibility in my collaboration (e.g. conveners) as fair



responses split by POSITION



Most cases positive. However, score of +2 is not populated, especially in large collaborations. Postdocs and juniors score less positive

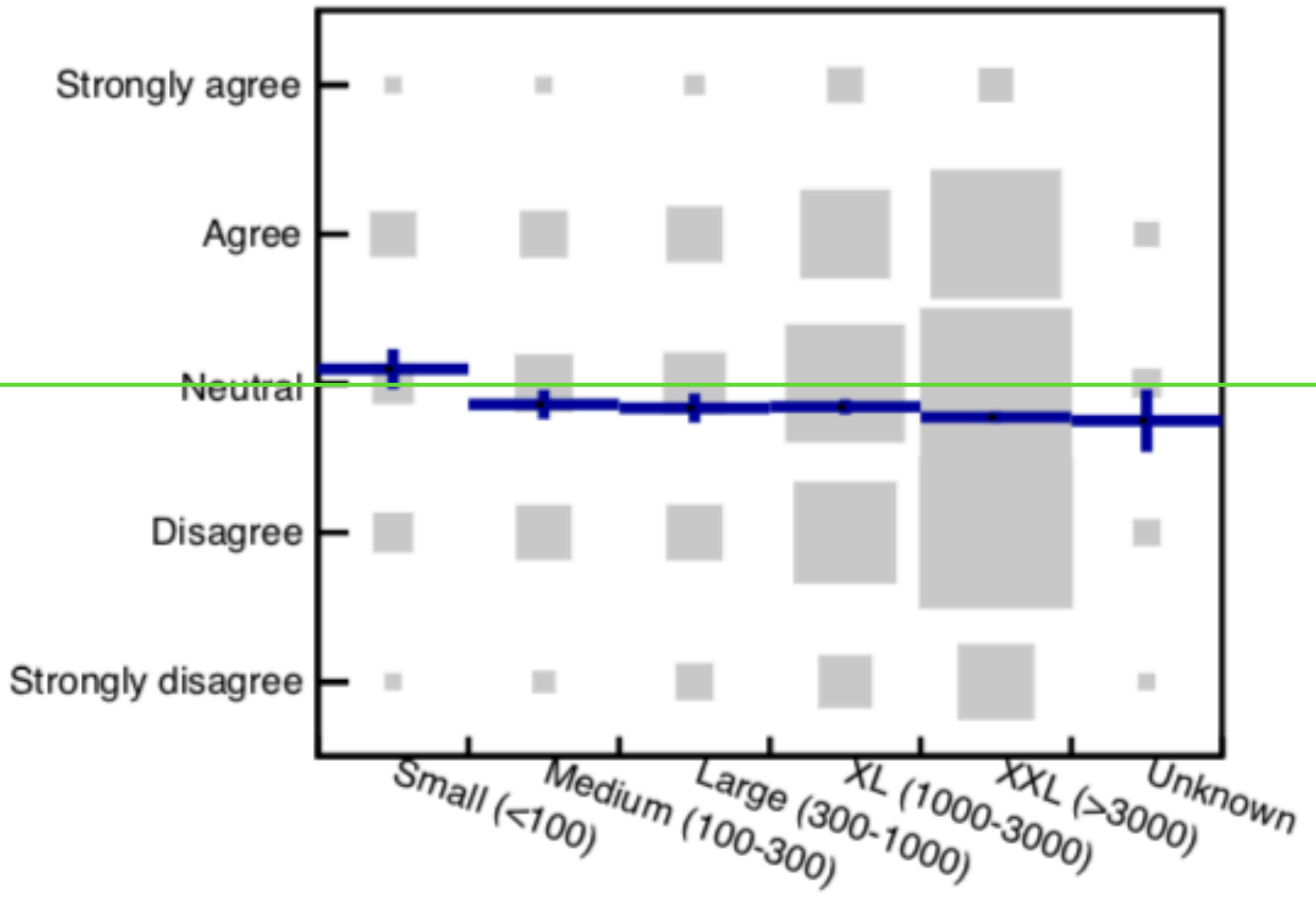


ASSIGNED RESPONSIBILITY IN SCIENTIFIC COLLAB -2

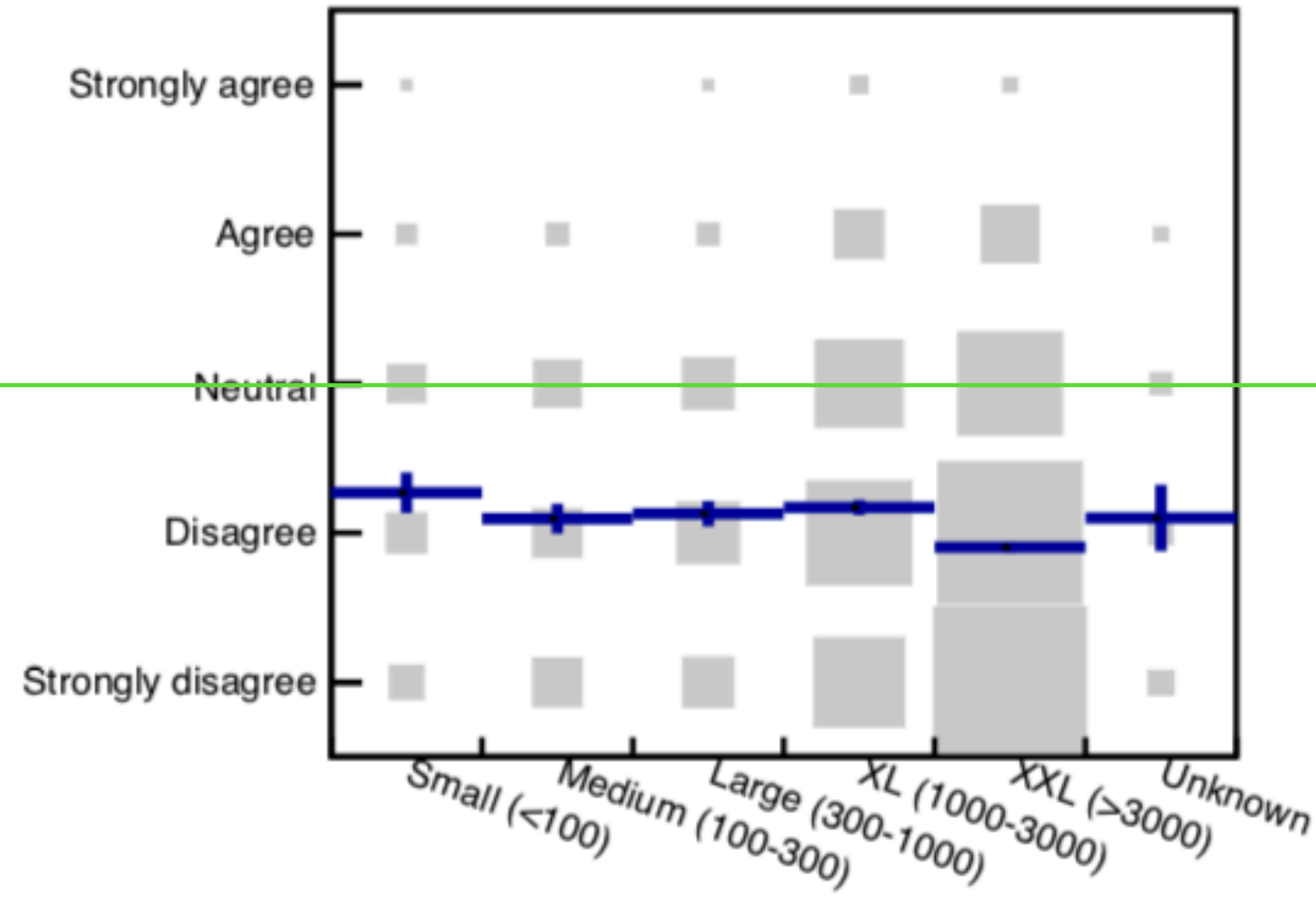
I perceive that the profiles of positions with responsibility are well known outside my collaboration

I perceive that the profiles of positions with responsibility are well known outside the particle physics community

responses split by COLLABORATION SIZE



responses split by COLLABORATION SIZE

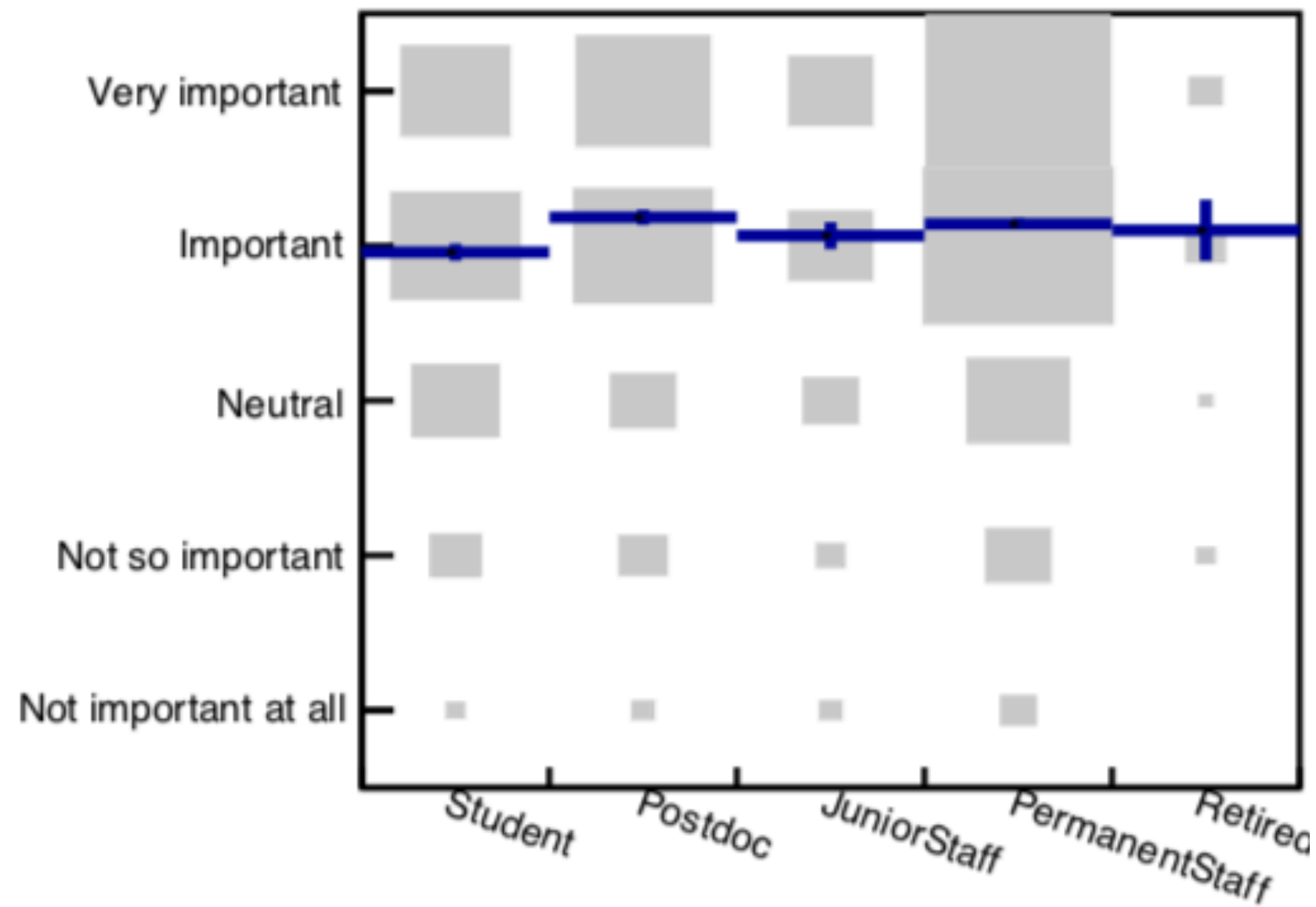


The further 'outside' the inner circle, the less well known our activities are perceived to be known to others

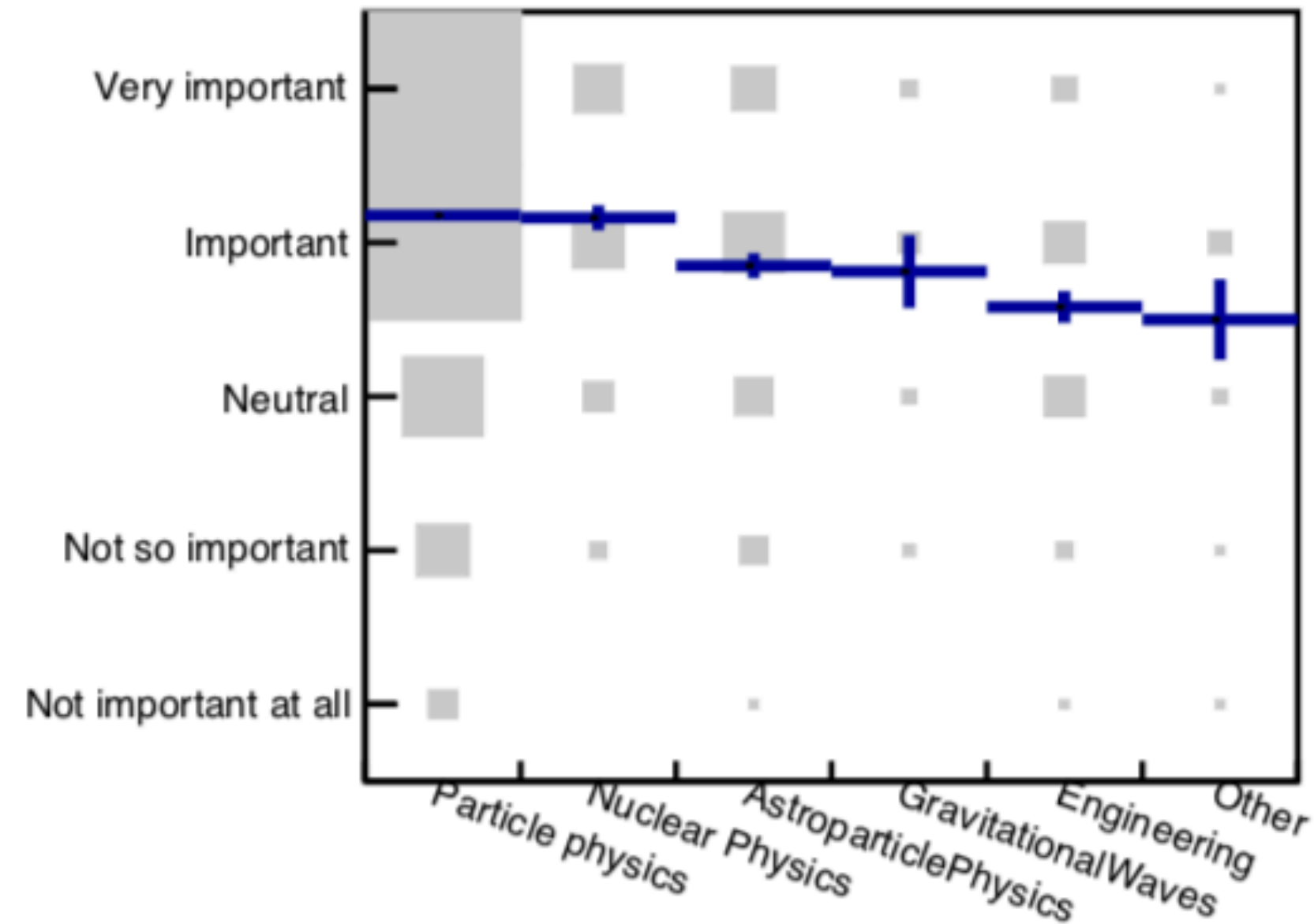
VERIFY SUCCESS: CONVENORS

*According to me the following aspects are important to verify the success of a scientist:
Selection as a convenor or equivalent*

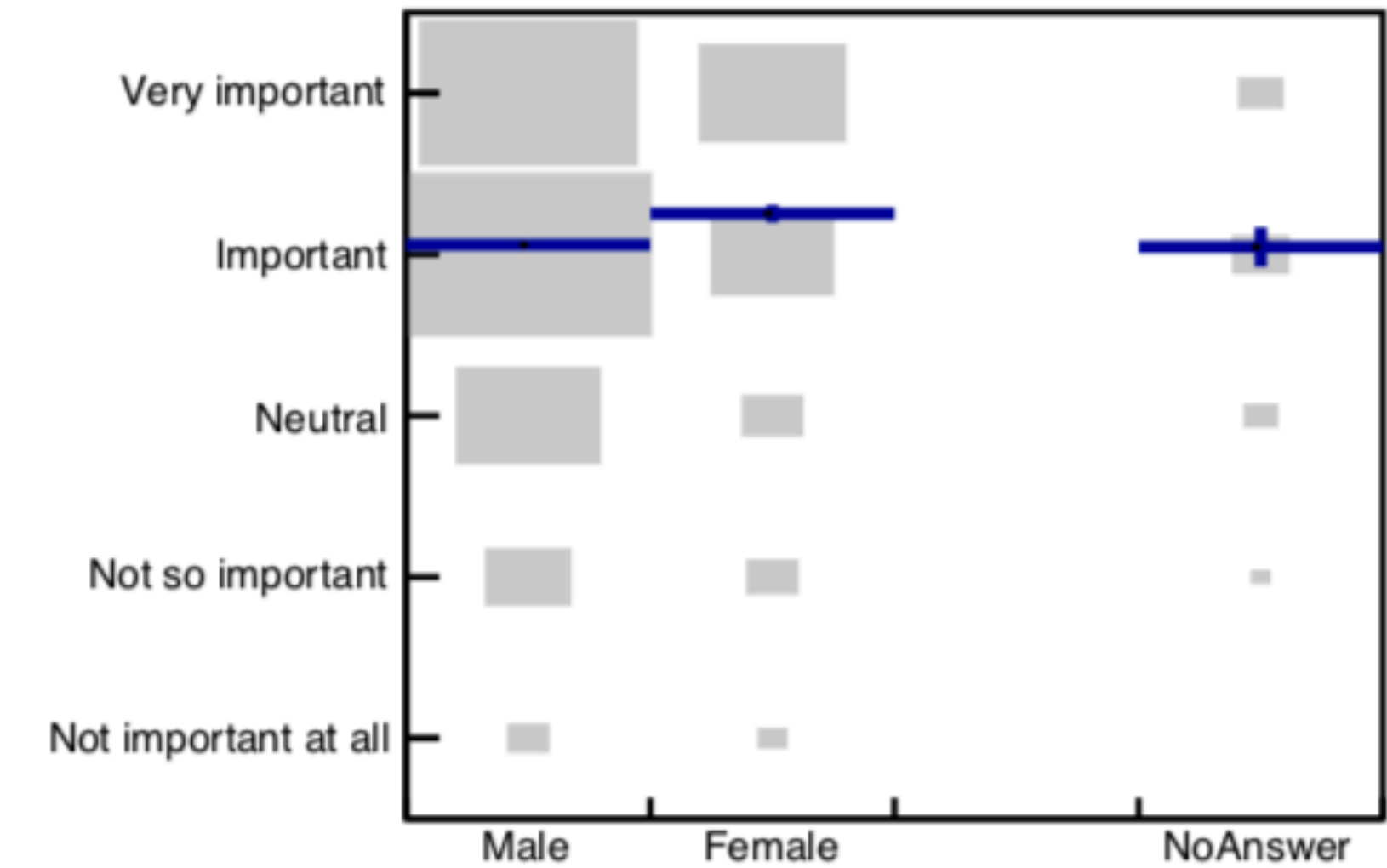
responses split by POSITION



responses split by DISCIPLINE



responses split by GENDER

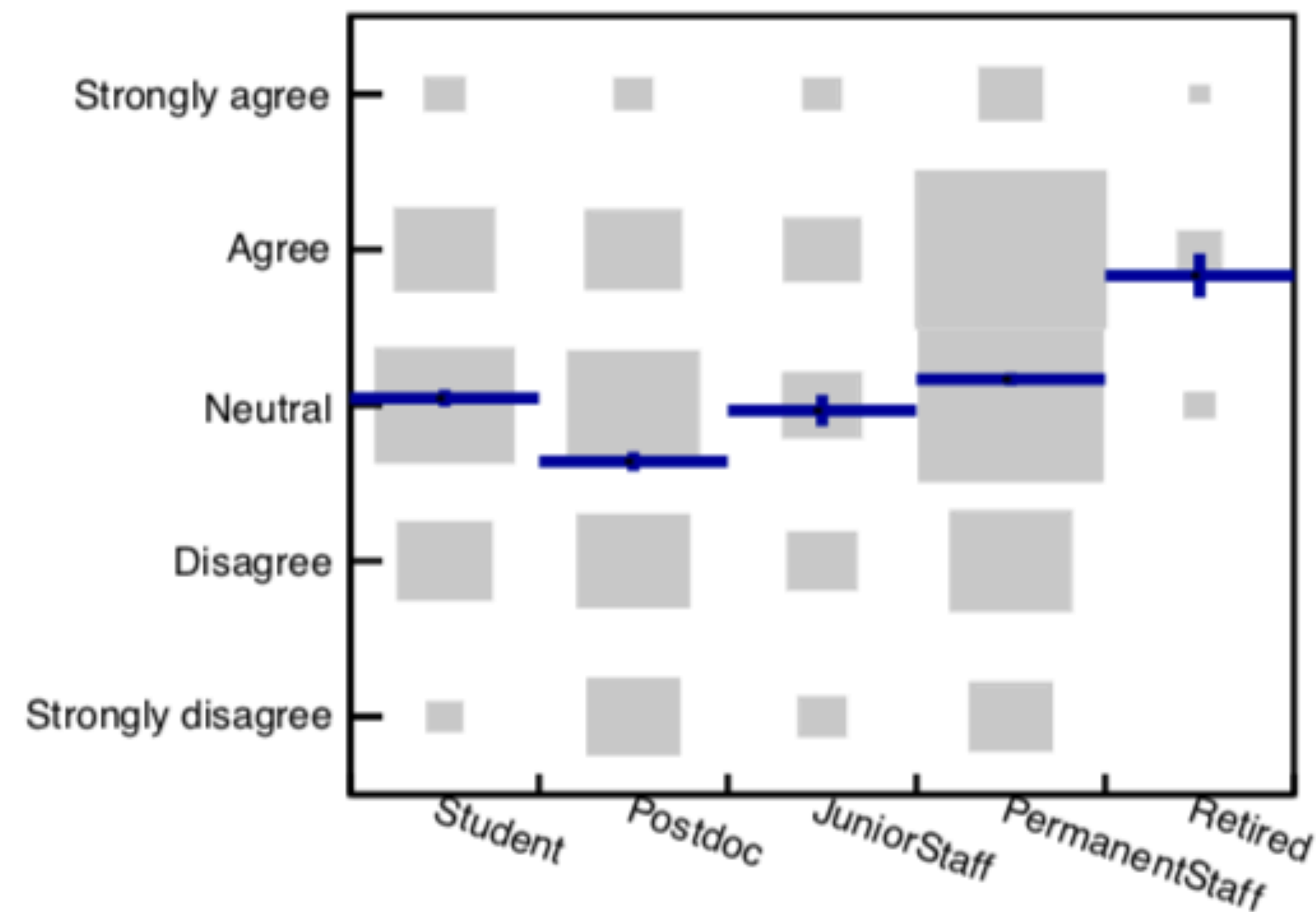
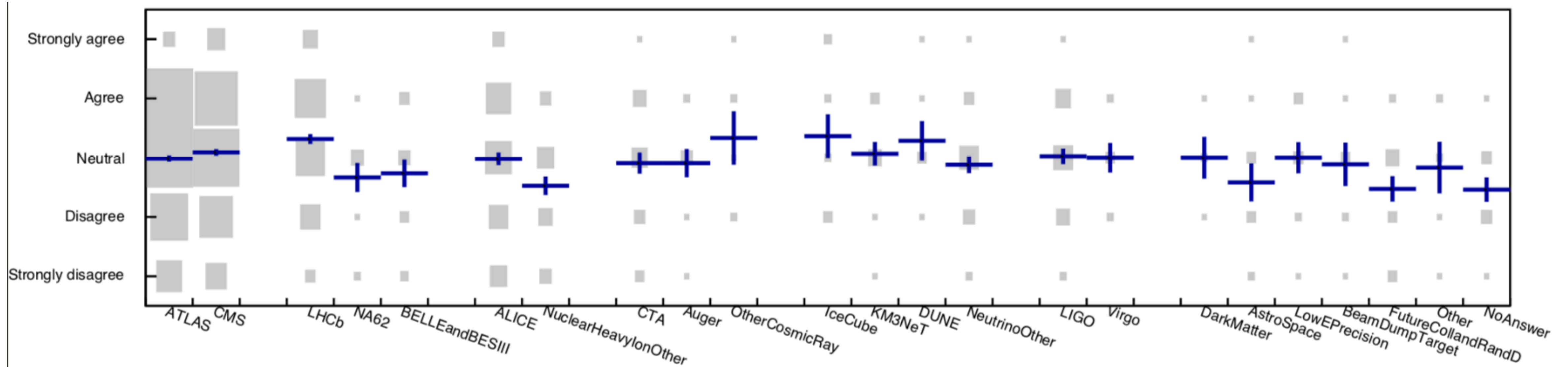


Convenorship is an important issue,
more so for Particle Physics than other disciplines
Females score slightly more positive



AWARDS AND PRIZES - 1

I perceive the process of nominations for awards as sufficiently transparent and accessible in my collaboration



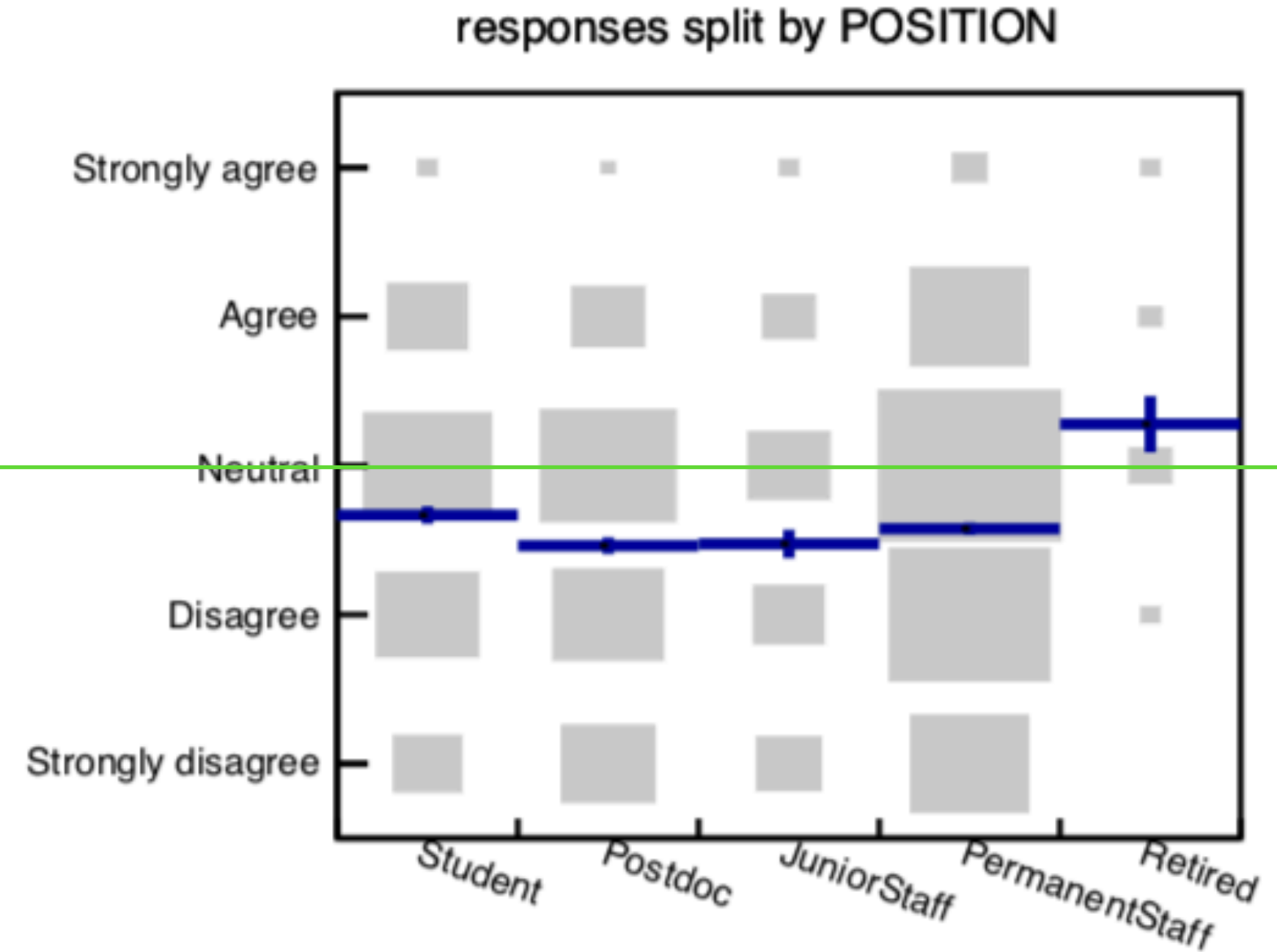
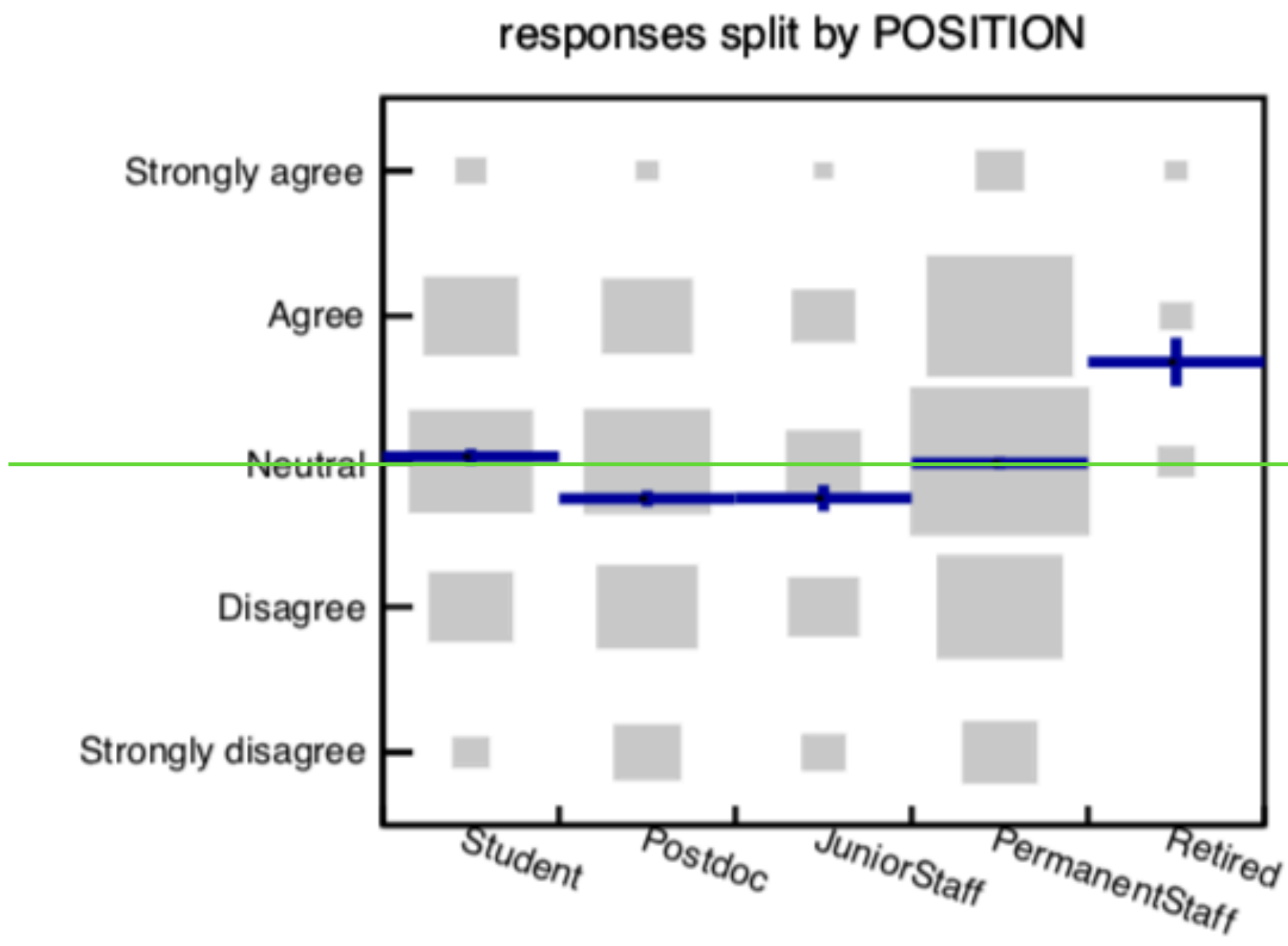
Process of awards fairly neutral. Not many scores are maximal.
 Large mismatch between 'receivers' (e.g. postdocs) and 'givers' (retired people)



AWARDS AND PRIZES - 2

I perceive that the profiles of these awards are sufficiently clear and advertised to be appreciated adequately outside the collaboration

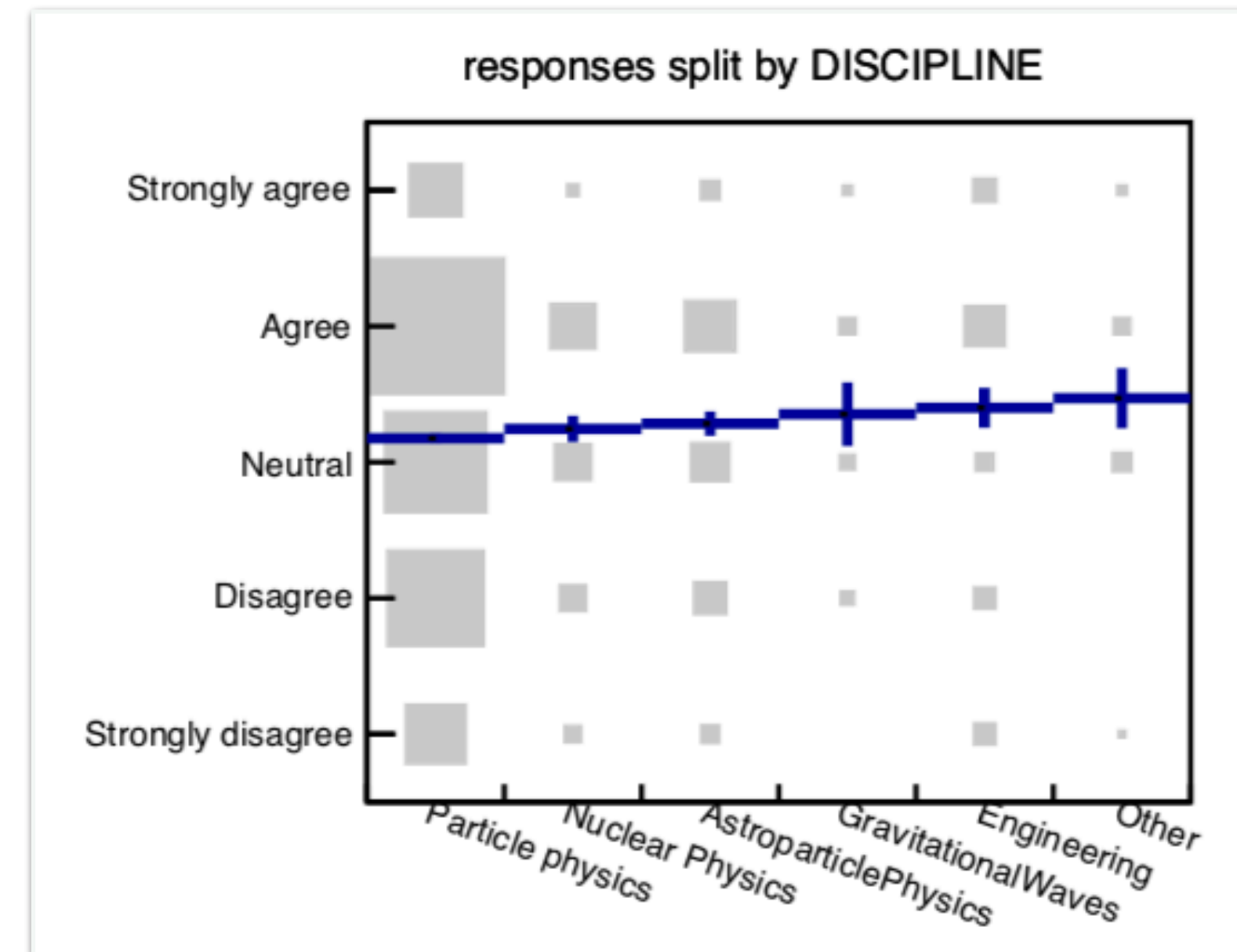
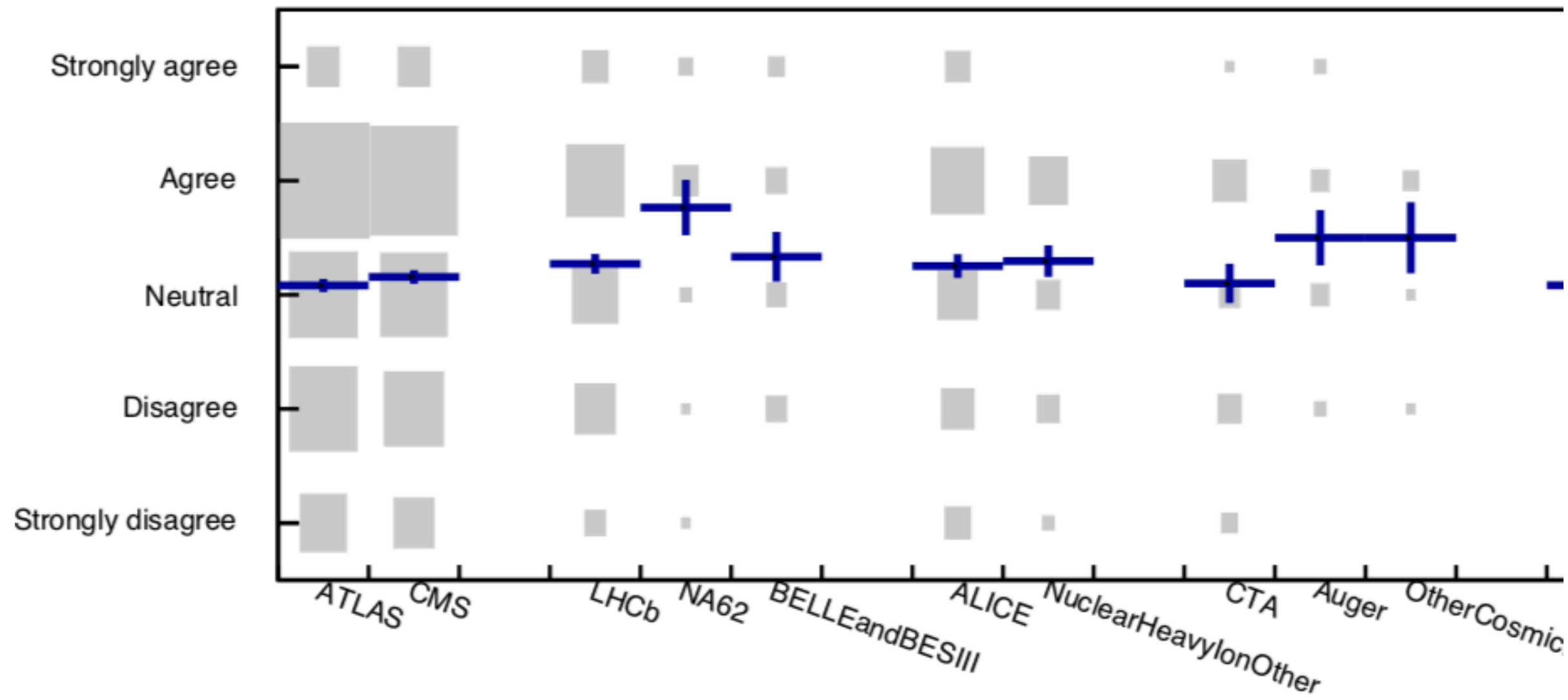
I perceive that the profile of these awards are sufficiently clear and advertised to be appreciated adequately outside the particle physics community



Awards perceived not to be well known outside our PP community

TECHNICAL CONTRIBUTION (HW, SW, OPERATIONS,...)

I perceive that my technical contributions get adequate recognition in my collaboration



Similar trends among collaborations
Intermediate career people score lower than permanent staff

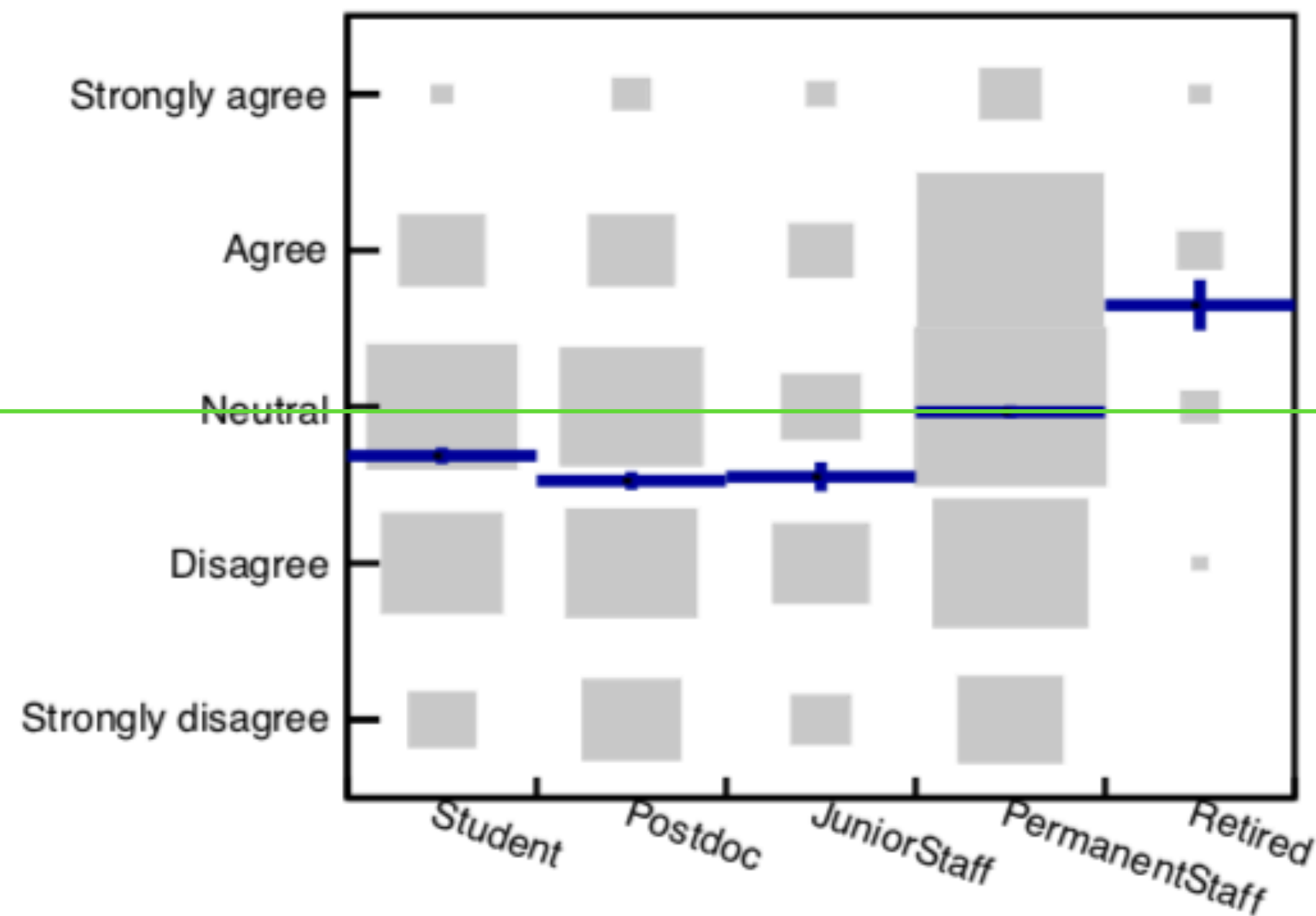


TECHNICAL CONTRIBUTION (HW, SW, OPERATIONS,...)

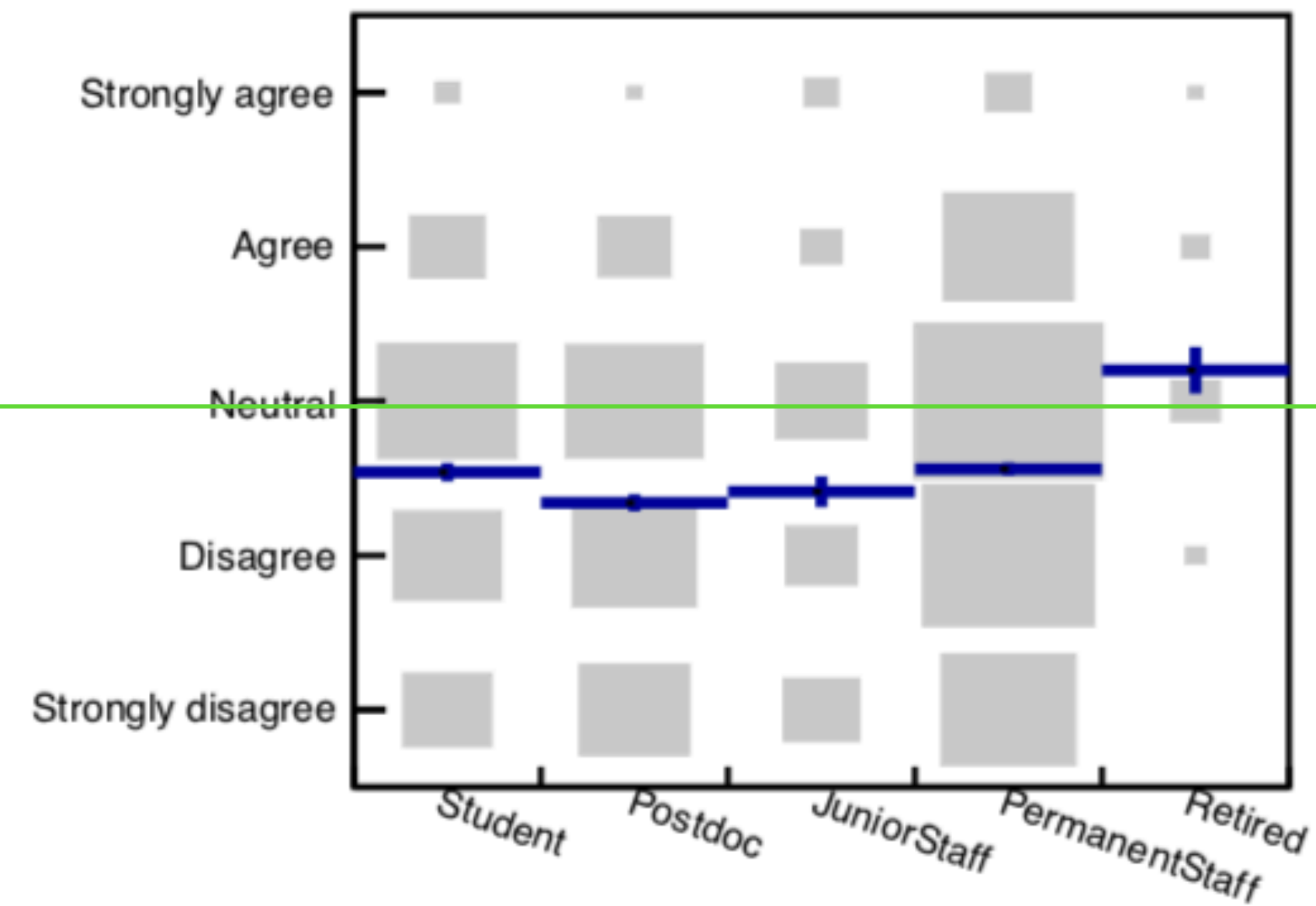
I perceive that my technical contributions get adequate recognition in the particle physics community

I perceive that my technical contributions get adequate recognition outside the particle physics community

responses split by POSITION



responses split by POSITION

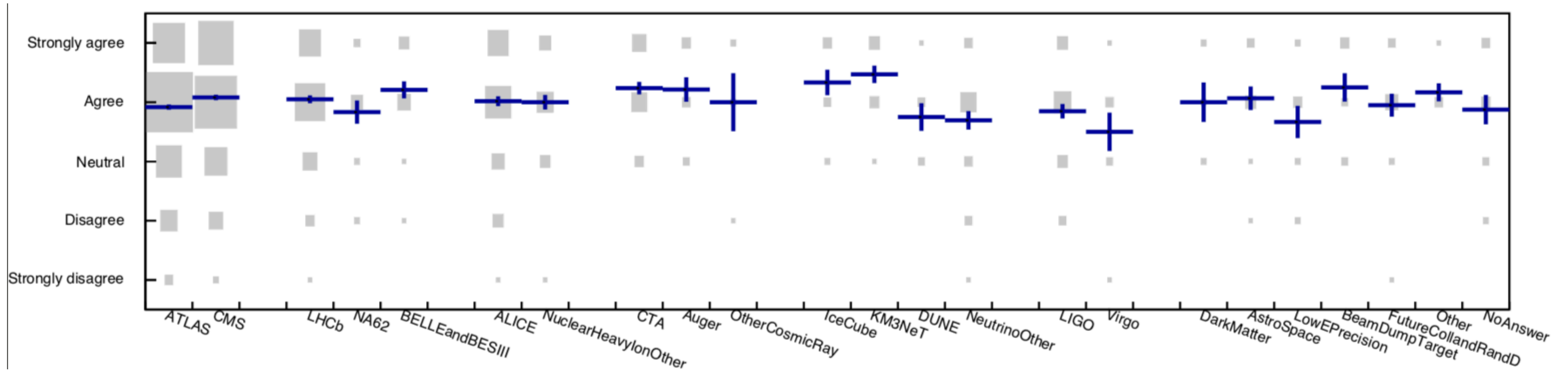


Again, the perception is that technical work is valued less to the outside world

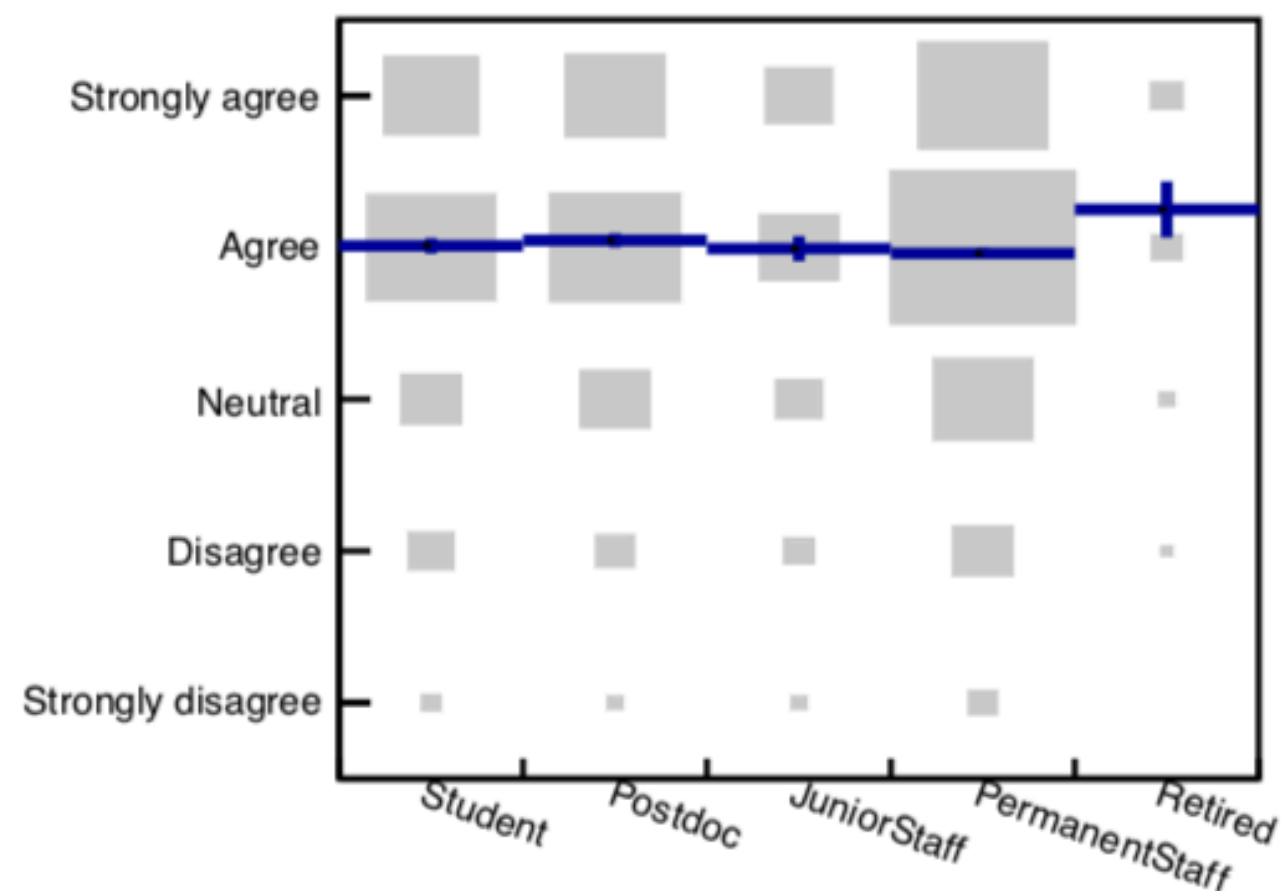


INTERNAL NOTES - 1

Scientific notes on analysis methods, detector and physics simulations, novel algorithms, software developments, etc. would be valuable for me as a new class of open publications to recognise individual contributions



responses split by POSITION

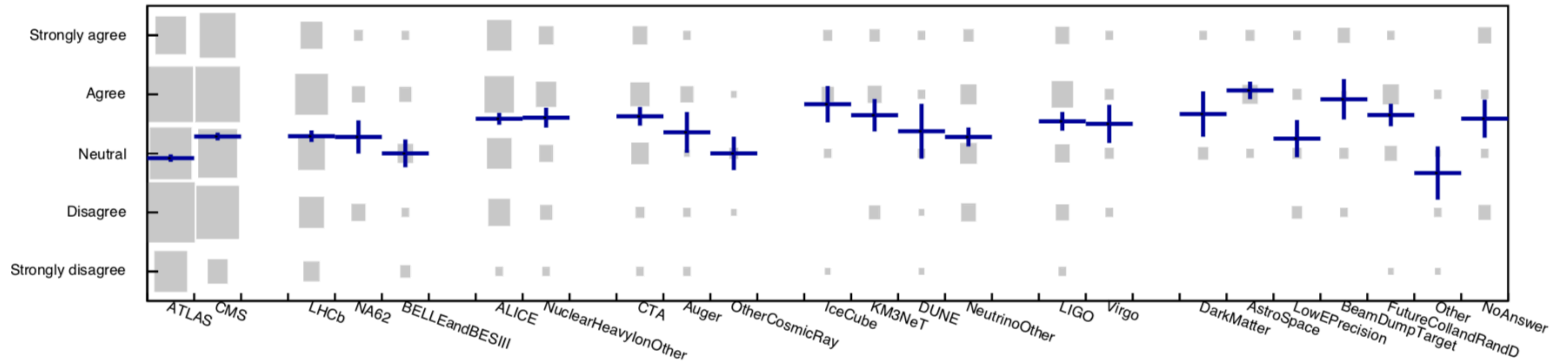


This shows a strong signal:
Community scores very high, in favor of these open publications
on novel and creative ideas

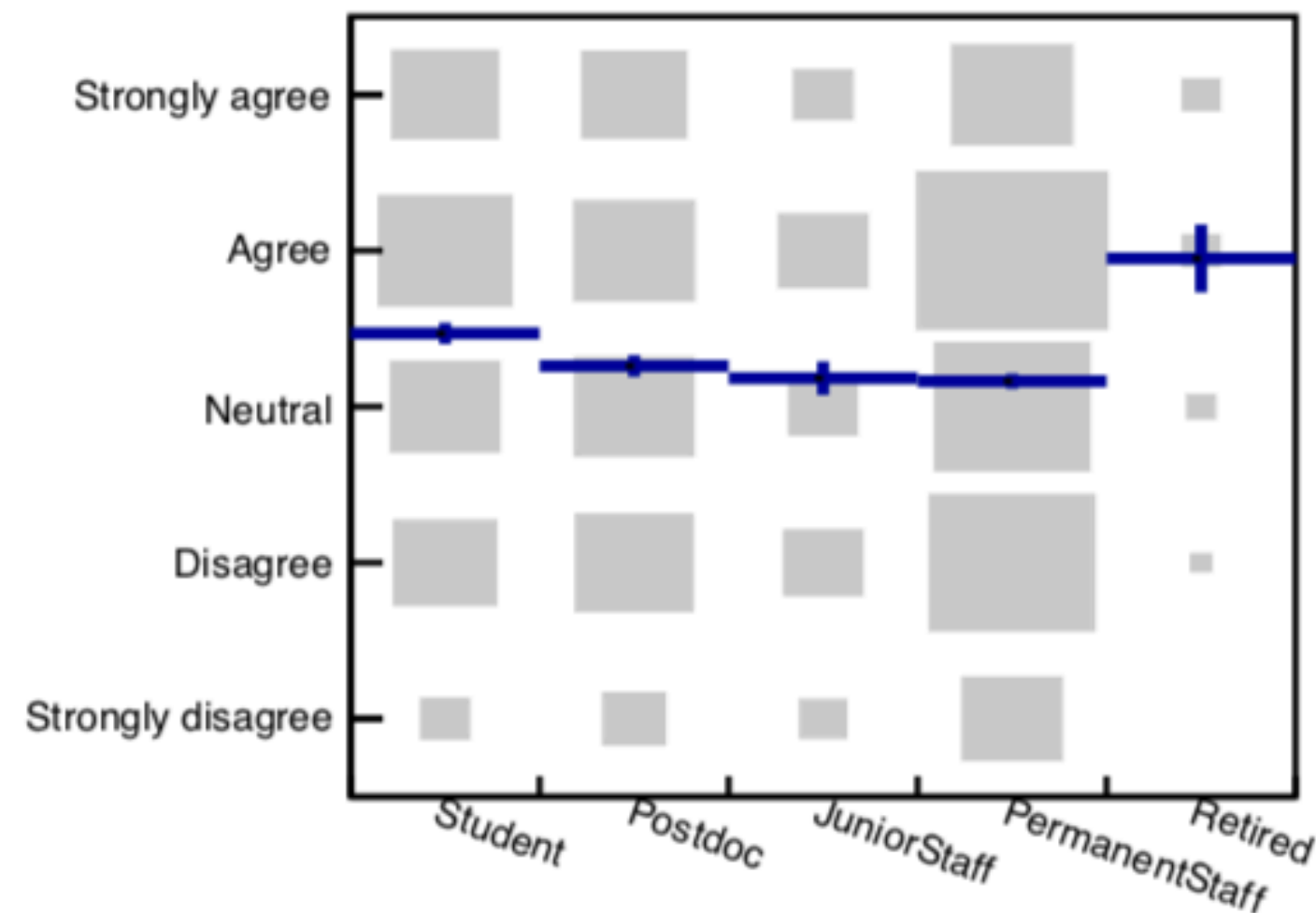


INTERNAL NOTES - 2

Internal notes (supporting a publication) should be made public



responses split by POSITION

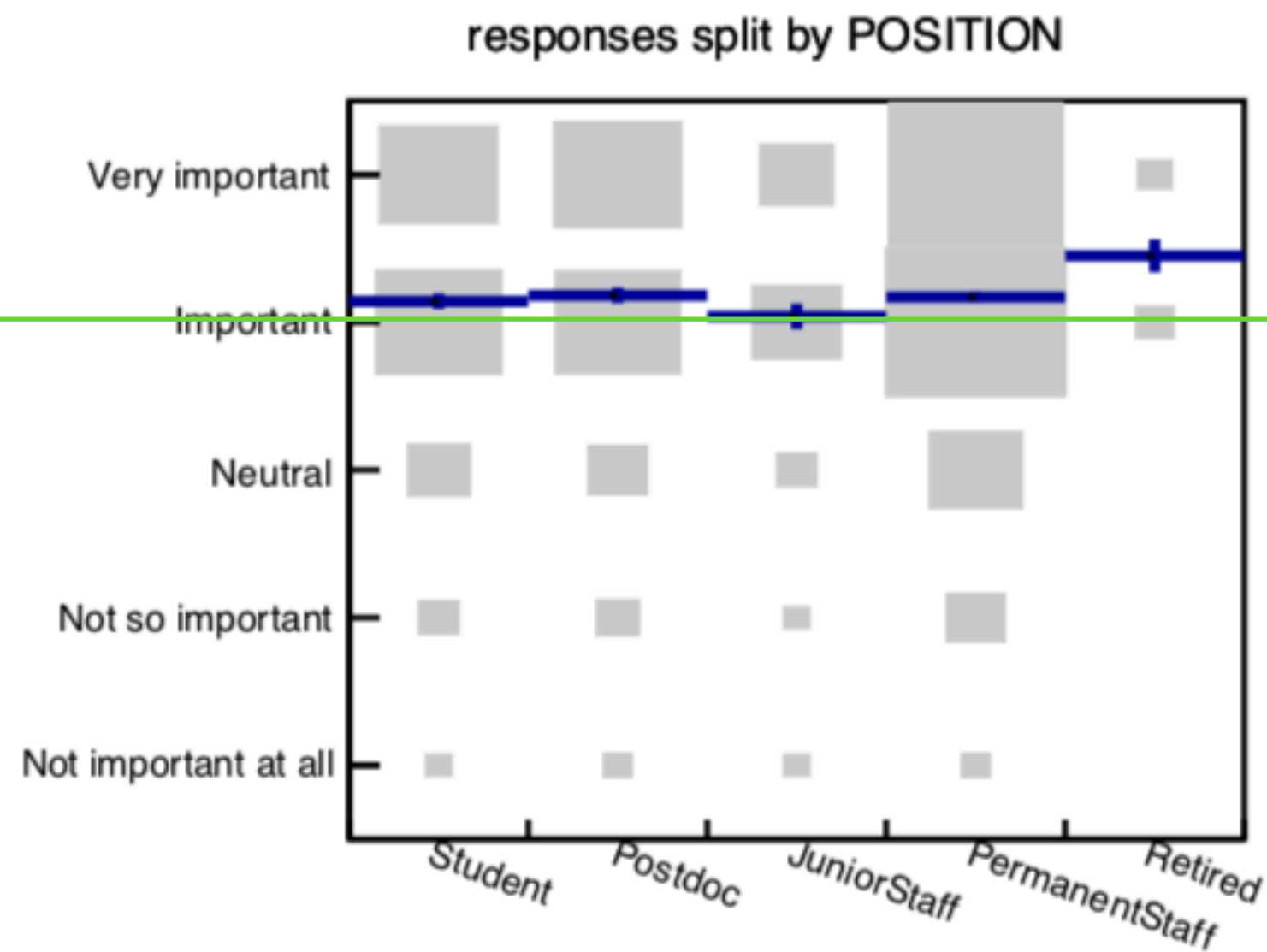


On this issue the community is very divided.
 Is it a good idea to make internal notes public?
 One of the largest differences in the mean value between ATLAS and CMS

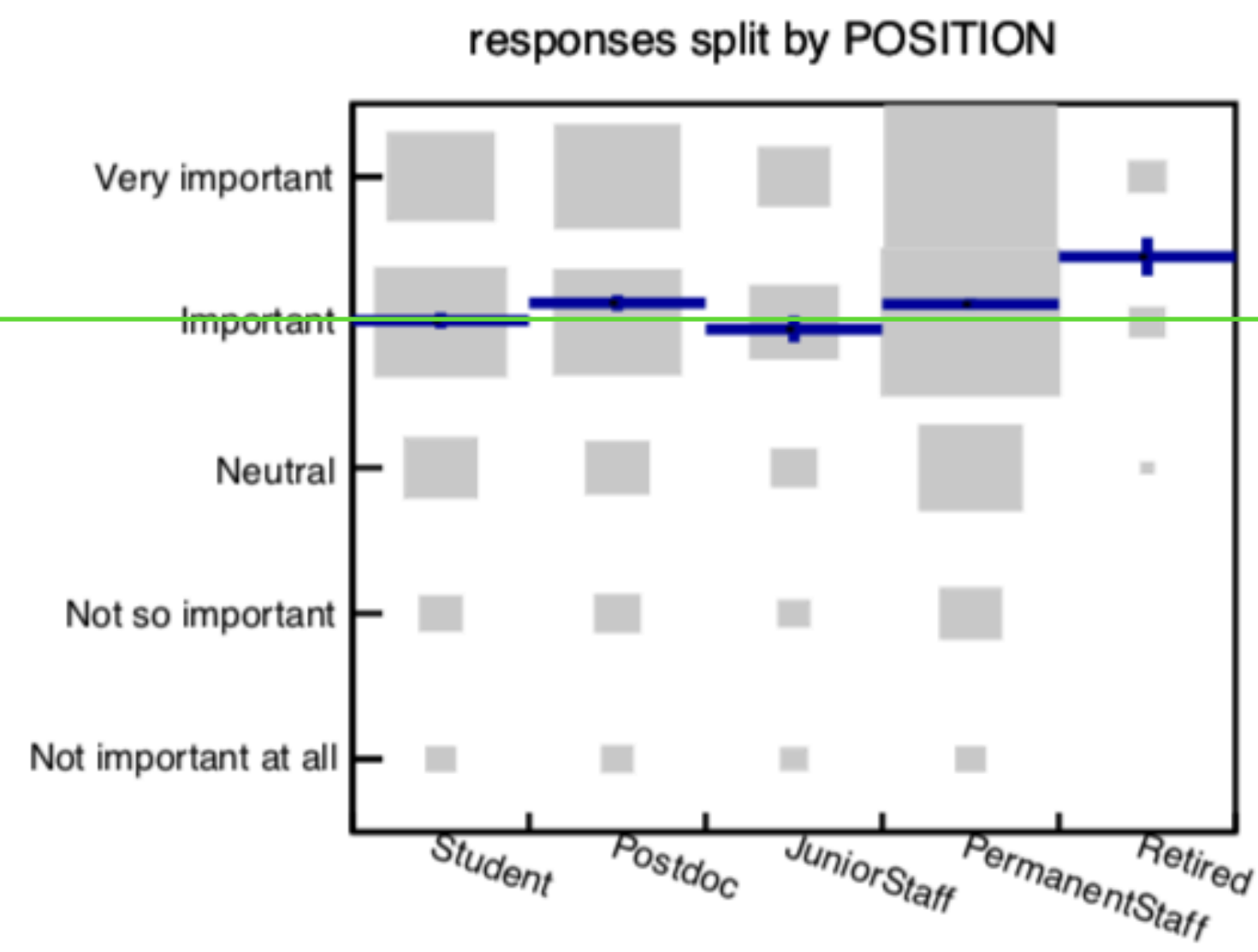


VERIFY SUCCESS OF A SCIENTIST

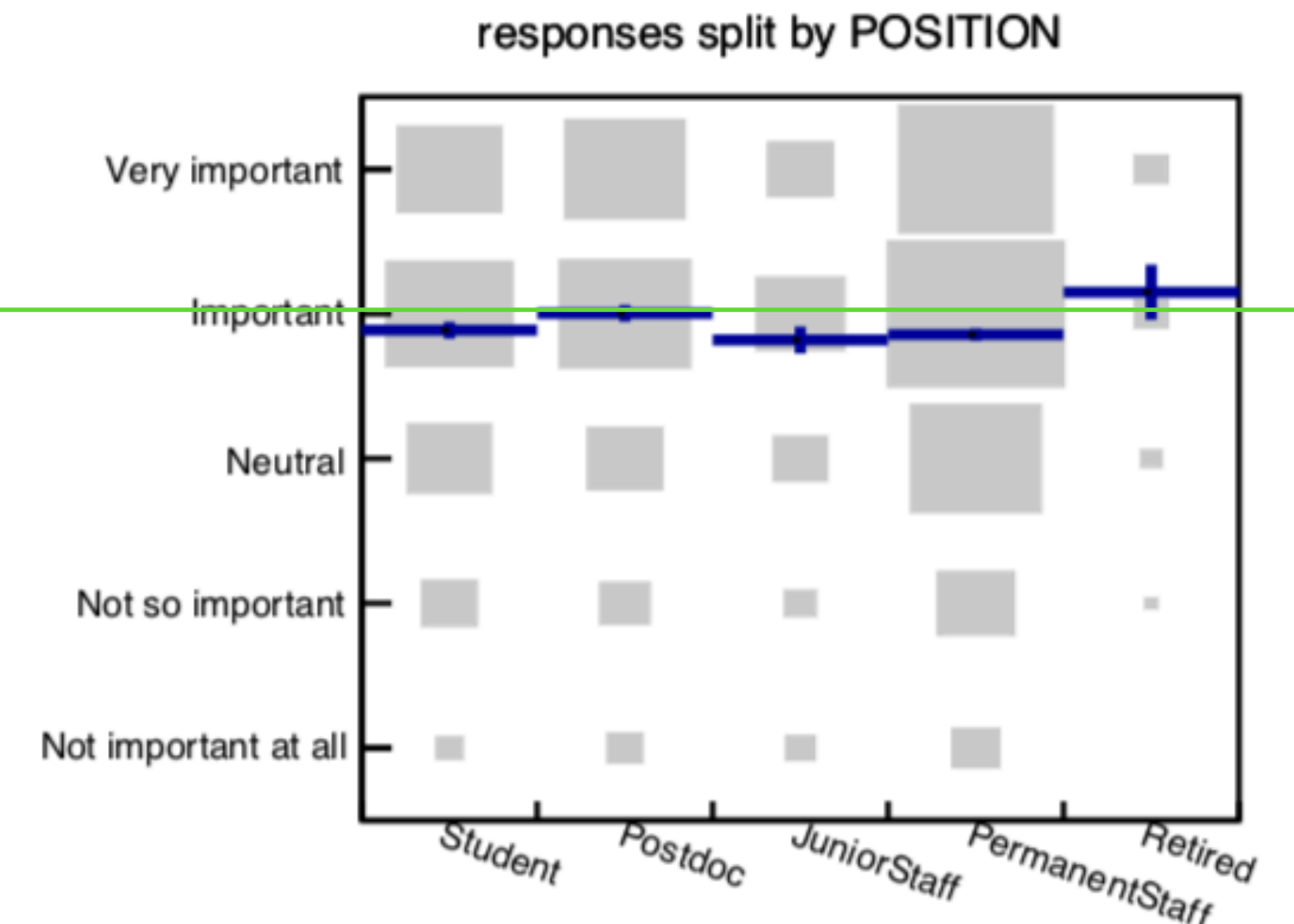
Receiving recognition for innovative work via an award



Receiving recognition for technical work via an award



Receiving recognition for hard work via an award



Success as scientist via an award is important, no matter what award it is
Innovative work is the most satisfying

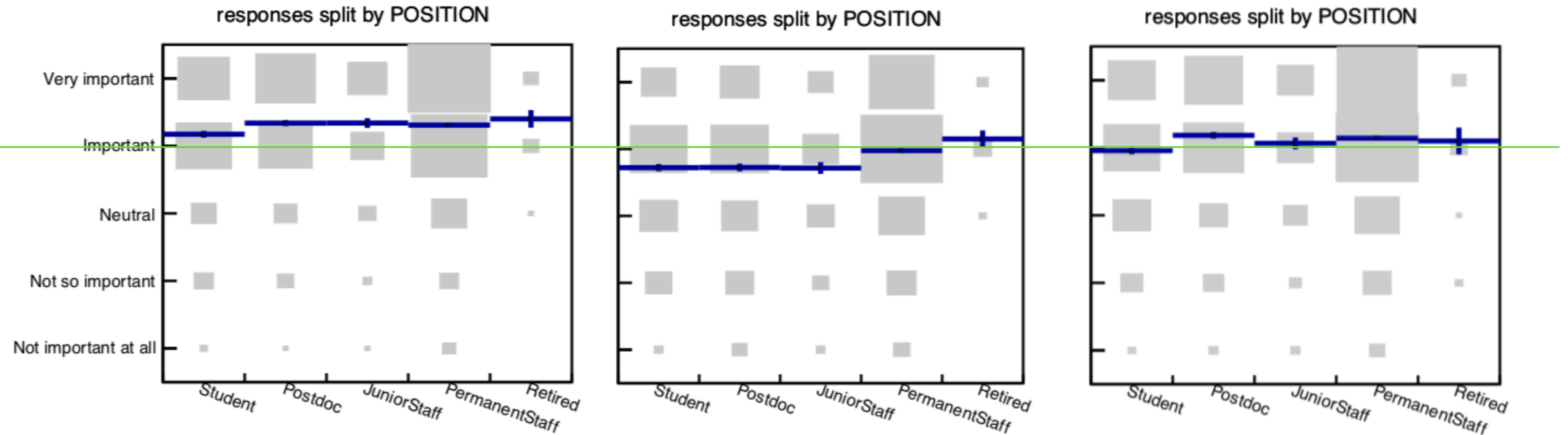


VERIFY SUCCESS OF A SCIENTIST

Being contact author for a publication

Authorship of internal notes

Excellent letters of reference

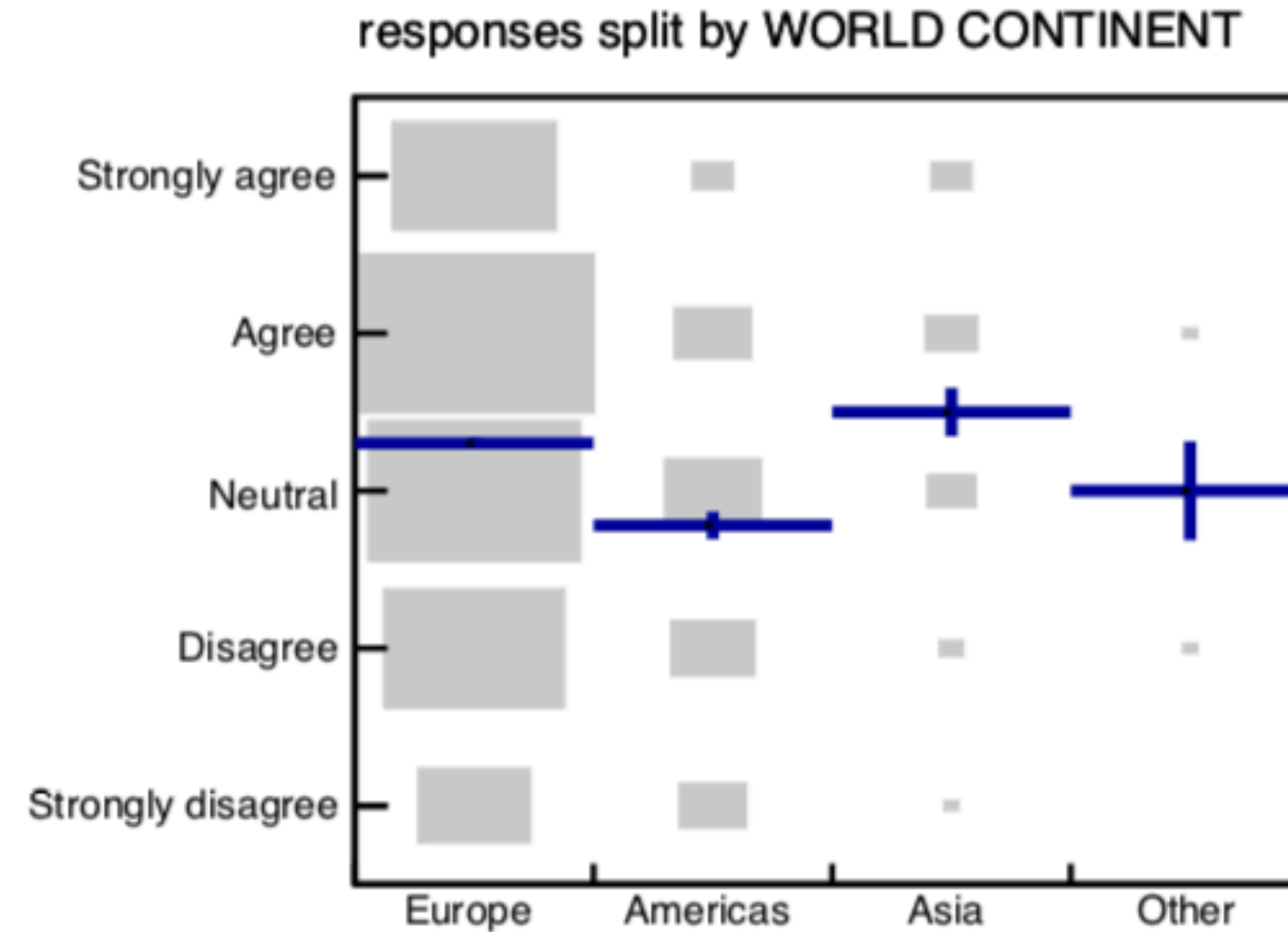
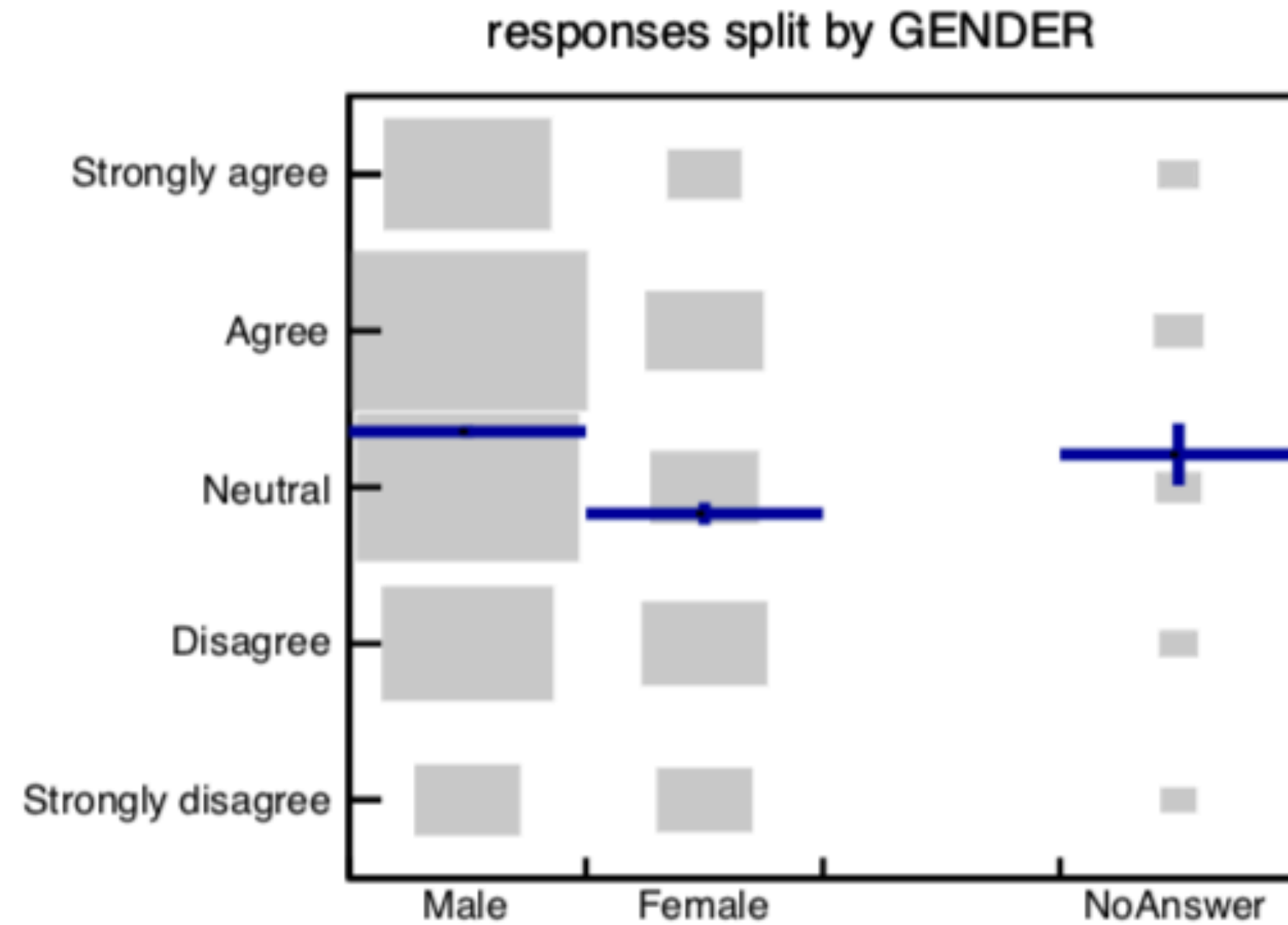


Contact author for a publication is perceived to be very important as well as excellent letters of reference



GENDER BIAS

I perceive no gender bias in the recognition of individual achievements



There is a perceived gender bias
The score shows a broad distribution
Is there a cultural aspect?

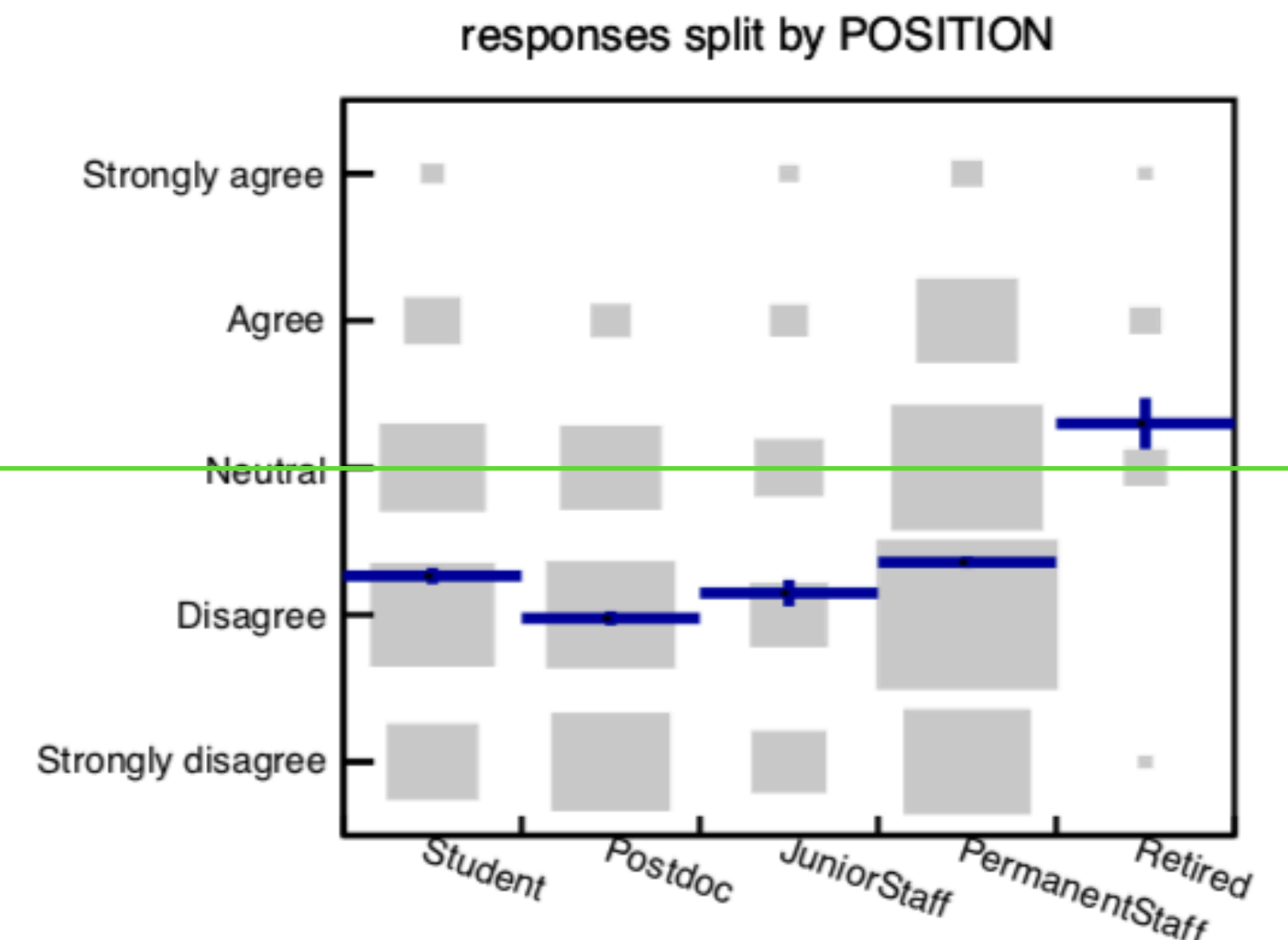
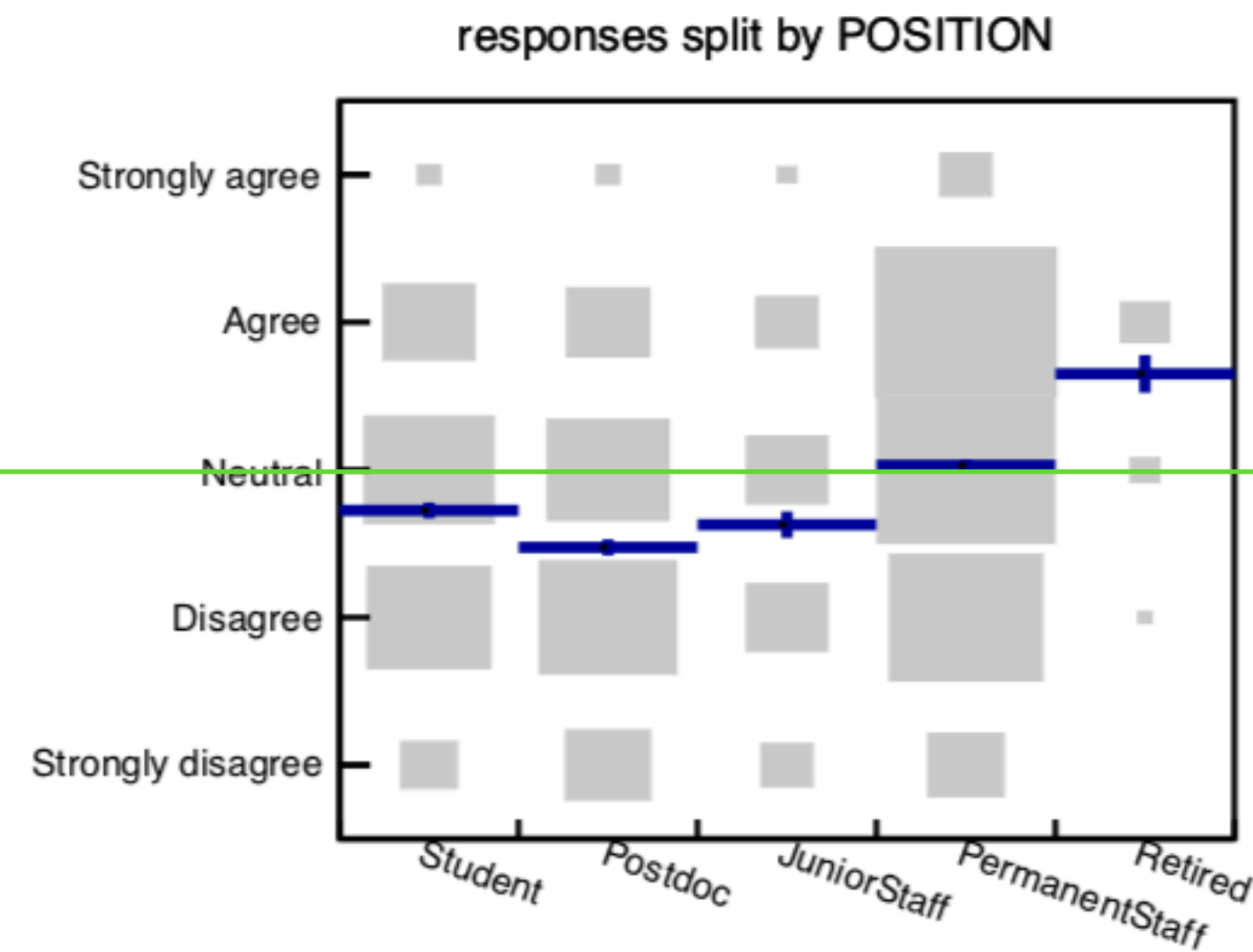
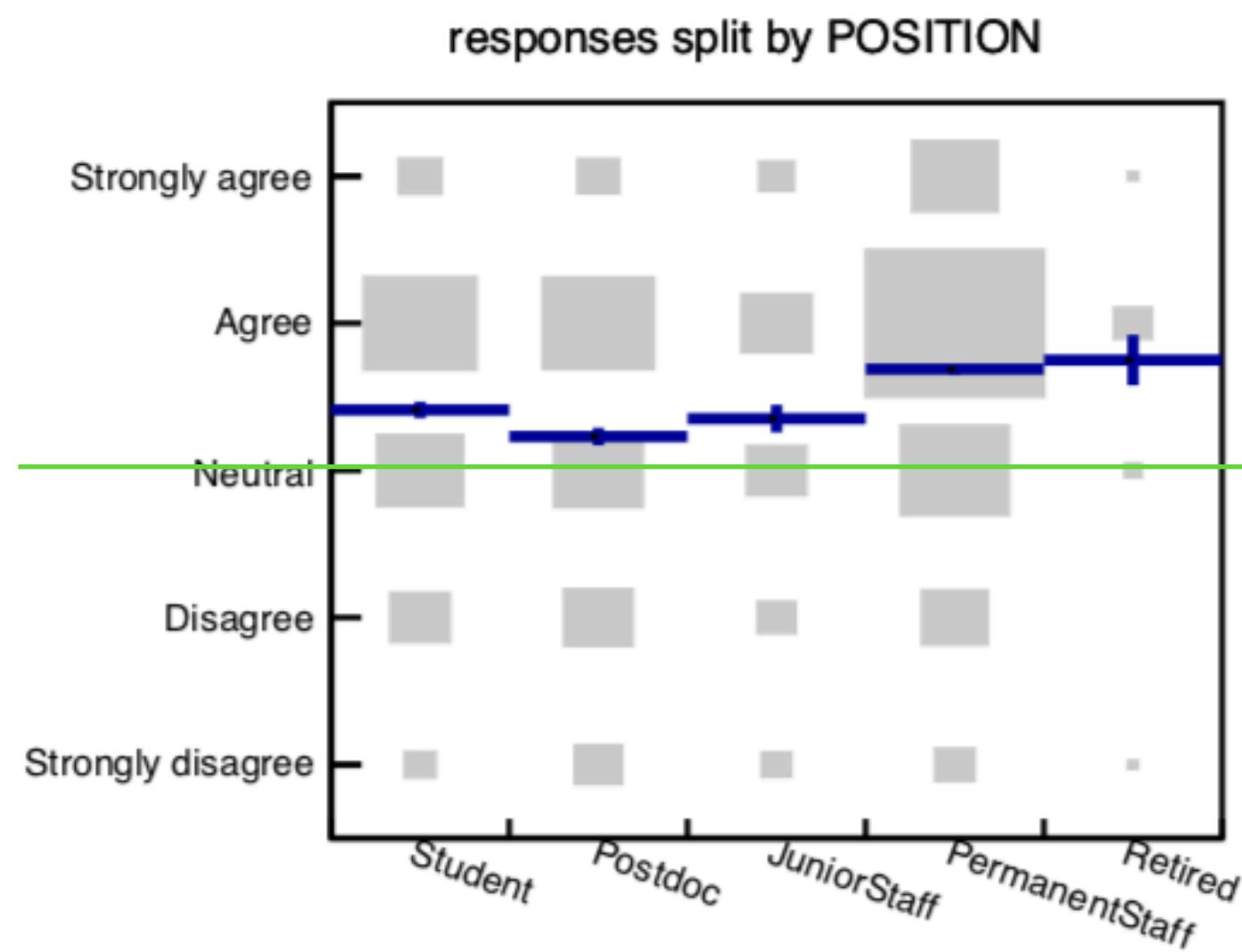


INDIVIDUAL ASSESSMENTS

Your individual contributions are recognized well among the members of your collaboration

The high-energy physics scientific community outside my collaboration is provided with sufficient information to assess me

The non-HEP scientific community is provided with sufficient information to assess me



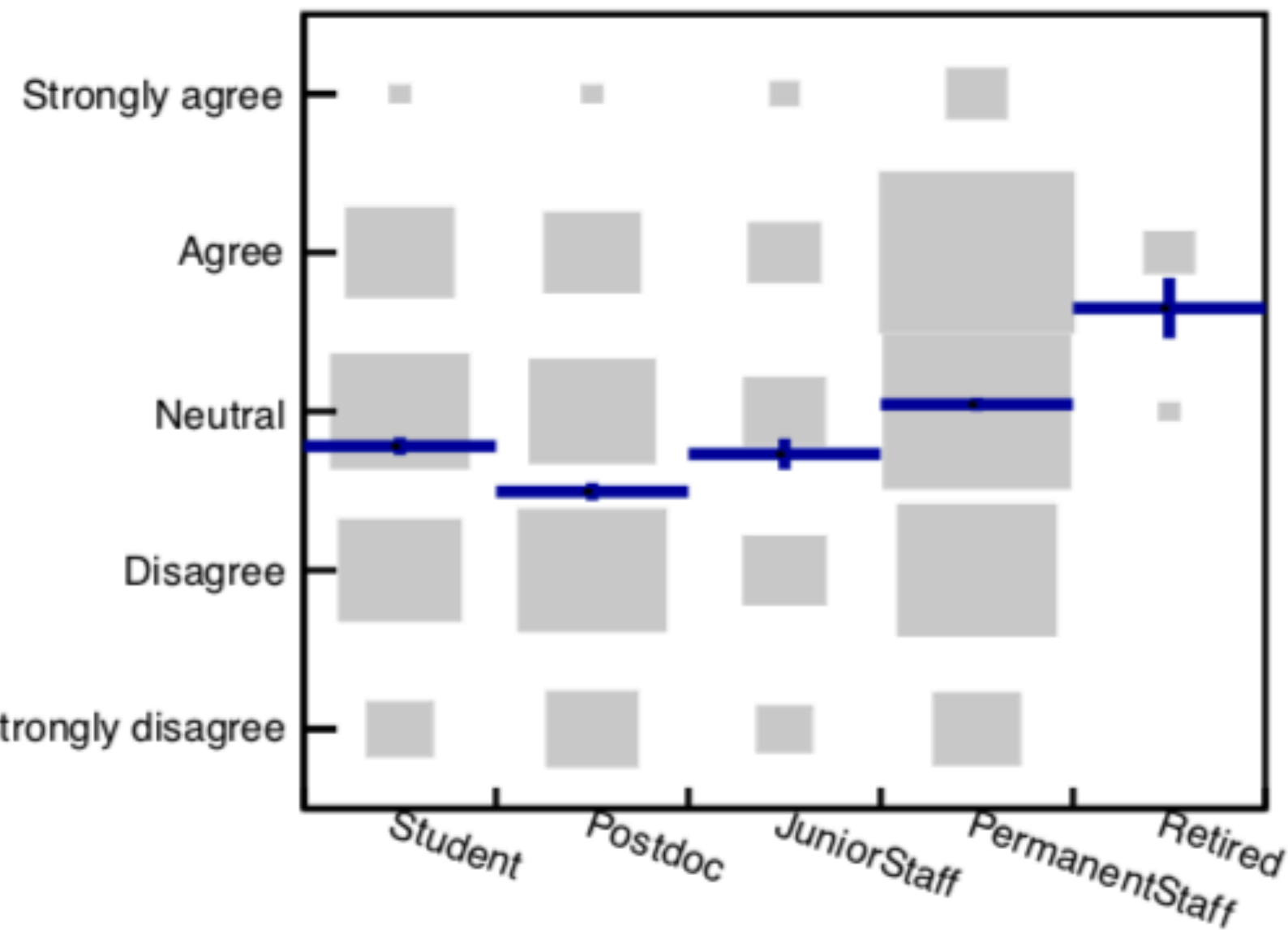
Very difficult to be assessed correctly outside the community



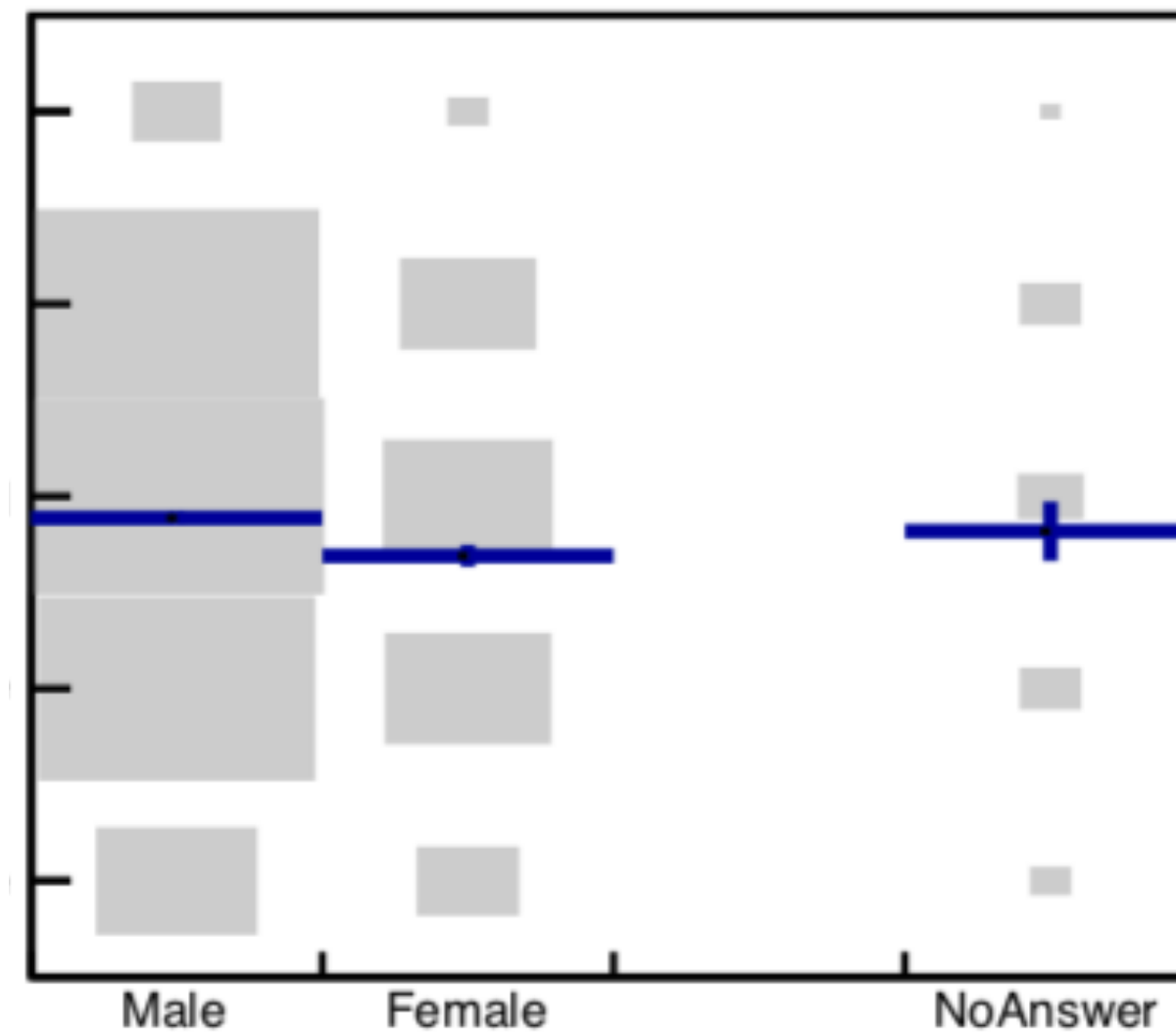
RECOGNITION OUTSIDE THE COLLABORATION?

There are sufficient opportunities for me such that my individual creativity, innovation and efforts are recognisable outside my collaboration

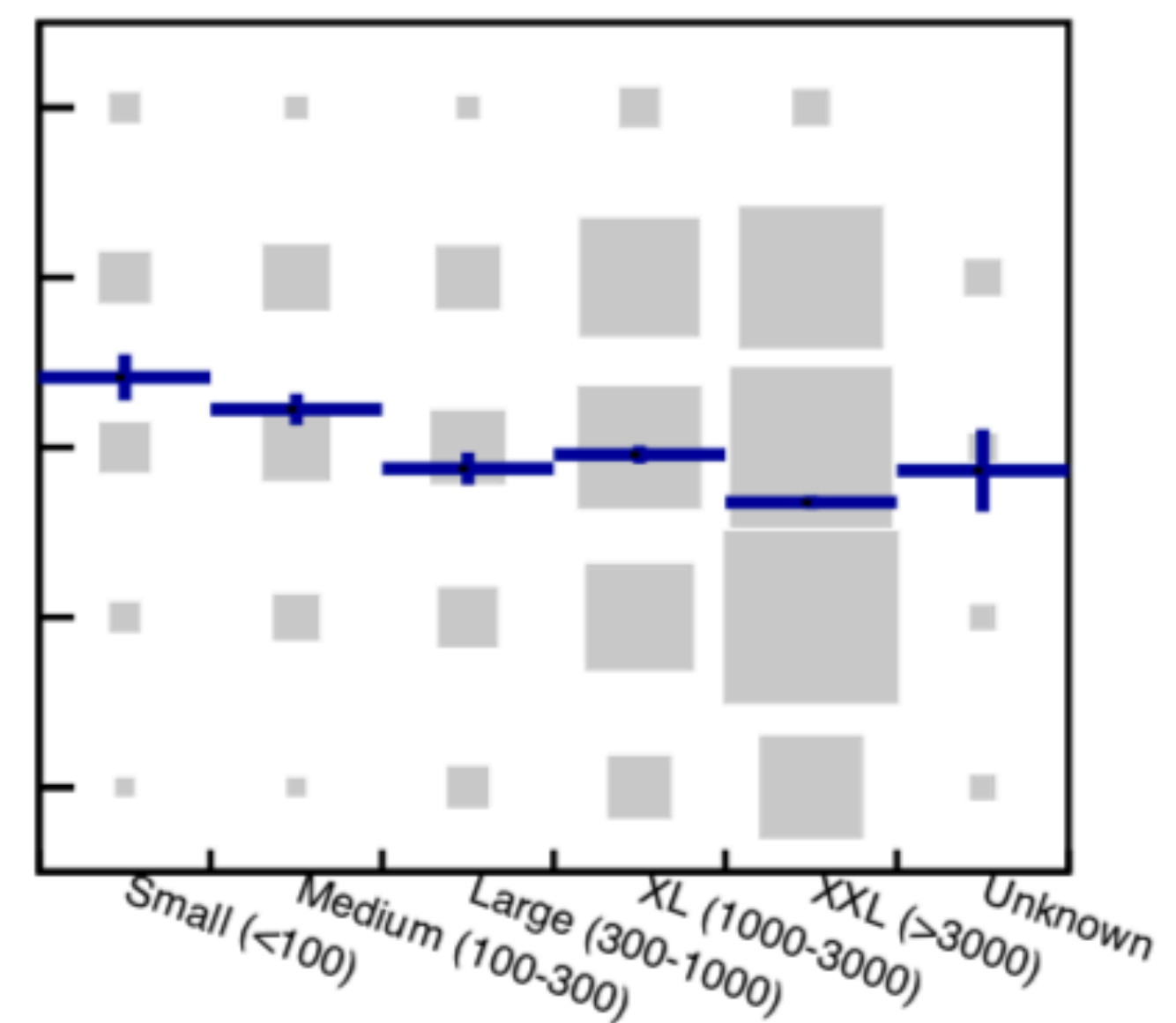
responses split by POSITION



responses split by GENDER



responses split by COLLABORATION SIZE



Recognition outside the collaboration does not score high. Only a few highest scores



OPEN QUESTIONS

- *So far no time to digest the suggestions offered by the open questions*

Which aspects or actions do you observe to be effective in your or other collaborations? Please give best-practice examples.

- Comments: 267 in total
 - Student: 37
 - Postdoc: 60
 - JuniorStaff 28
 - PermanentStaff: 137

Do you have additional suggestions on the topic of recognition of individual achievements?

- Comments: 291 in total
 - Retired: 5
 - Student 39
 - Postdoc 75
 - JuniorStaff 35
 - Permanent 131
 - Retired 6



OPEN QUESTIONS - EXAMPLES

Category of *perceived issues* to address:

- If you are part of a group that has large influence within the collaboration, then you are more supported.
- The better-connected people get easier access to recognition.
- There are two groups of physicists. One group does the hard work and often gets no recognition. The other group is good in talking and socializing, while obtaining credit for work they did not do.
- Too many mediocre people with strong unjustified egos are around.
- There is a notable bias toward people resident at CERN. Talking with many people, presenting in different meetings and being in meetings are more important than actually doing (good) work.
- People can be author on a long list of collaborative publications without doing anything in the collaboration.
- Need more recognition (incl. awards) of “technical” work: detector, reconstruction, trigger software, general software, computing, etc.



OPEN QUESTIONS - EXAMPLES

Category of ***potential options*** to address issues:

- Conference talks are key opportunities to demonstrate excellence. A fair distribution is essential as well as the liberty to indeed demonstrate scientific excellence.
- Support is needed by the management of the collaboration for people doing the work, including innovations and creative solutions to problems.
- Give young people real responsibilities: convenerships, plenary talks at conferences, project leader, etc. These roles tend to be well understood by external evaluators.
- For each collaboration-wide publication, a list of major authors and their achievements is important to be made available on relevant and public web pages. Non-public notes supporting physics papers and including a list of direct authors with a short description of their individual contributions are important.
- Internal notes are valuable to get informed about the contributions of individuals, if and only if they come with a clear description who did what.
- Thesis and other achievement awards within the collaboration are important, but the selection should be based on clear facts, i.e. avoid promotion campaigns to get one person an award through popular vote.
- Requiring people who become conveners to have made qualitatively important technical contributions to the experiment.
- Make sure that new people can become conveners rather than to reinstall previous conveners.
- Public lists of management positions over the years are essential.



OPEN QUESTIONS - EXAMPLES

Category of *points of attention*:

- Finding the balance between collective recognition and individual recognition is challenging, yet typically individuals seek career opportunities.
- The system might be reasonable if you stay with your career in the same large collaboration, or a similar one, but much more difficult if you would move to another science field.
- Most 'recognition' centers on giving additional work to the person doing good work (e.g. a conference talk or making that person a convener). It is silly to award a convenership to someone doing good work; they may not have any management skills.
- The quality of research of an individual can only be assessed by a human panel.
- Whatever recommendation you will draw from this survey: Evaluate carefully before introducing new metrics to assess people. Any such system will be misused. A collaboration 'knows' internally who the outstanding people are. These need to be pushed.



FINAL REMARKS

Survey was generally well received

- Not many complaints about the survey itself

Encouraging to see that people found time to fill in the survey

- The topic is relevant and deserves attention
- Still, a large fraction of HEP physicists did not respond to survey

The raw data will ***not*** become publicly available

- No tracing to individuals possible
- Only generated plots will become publicly available
 - Collaboration or organization can ask for additional specific plots
 - Contact person: ECFA chair Jorgen d'Hondt



FINAL REMARKS

It is time to reflect on the outcome

- Excellent start for debate with the panel and with collaborations

This data is valuable and illuminating

- Continue this process and collect more data

We have to make sure that the messages are picked up

- Create awareness in our communities
- Initiate discussions in collaborations - potentially amend their policy
- Exchange methods and best practice example among the community

Stay tuned for more elaborate analysis and recommendations

