Brazilian physicists community diversity, equity and inclusion: a first diagnostic

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We report the results of a survey applied to students and professionals in the area of physics in Brazil, pursuing to draw a portrait of the composition of this community in terms of standard social markers (i.e., age, race/ethnicity and geographical origin, gender and sexual orientation, disabilities, etc.). The main goal was to quantify the representativeness of different groups in the community and to detect motivations and difficulties encountered by each group throughout their studies and career. This survey was open to the members of the Brazilian Physics Society (SBF) from July to September 2018.

I. INTRODUCTION

Diversity, equity and inclusion are recognised to increase creativity and contribute to positive competitiveness [1–3]. Since diversity is seen as an efficient engine of innovation and development, the progress of science and technology can benefit from diversity and, reciprocally, can exert a positive feedback in changing the observed picture of inequality [4–6]. This is specially true in a country like Brazil, whose economy is one of the strongest in the world and, at the same time, one of the most unequal.

As shown by many recent studies, Brazil is specially unequal and an extremely difficult country for women, LGBTQI+ (lesbian, gay, bisexual, transgender, queer and intersex) people, Afro-descendants and members of indigenous communities, as well as individuals with disabilities [7–10]. The Brazilian scientific environment is not an exception to the rule [11], being dominated by white and male people, implying under-representation of other groups, specially in leadership or prestigious positions, with respect to the demographic composition of the full population [12–15]. However, no records about the Brazil’s physics community exist beyond markers as age, sex, place and residence of people. Within this scenario, in order to draw a quantitative picture of the level of diversity, inclusion and equity amongst the members of the SBF, we applied a survey, using standard social markers, e.g., age, race, ethnic and geographical origin, sex, gender, sexual orientation, age, race, disabilities. The main goal of this paper is to present a comprehensive characterization of the diversity of the Brazilian physical community, going beyond the usual markers of age, gender and place of work. The results of this research can be relevant for the progress of physics education, both from the point of view of students, teachers and researchers. Detecting motivations and difficulties to help defining policies is essential to improve the quality of education, the formation of new human resources in the area of physics and, therefore, to improve the quality of research.

The Brazilian Physical Society (SBF, in Portuguese) is a nonprofit association formed by physicists and scientists from related areas with activity or collaborations in Brazil. It was founded in 14 July, 1966 and its office is located in São Paulo city. In 2003, the Gender Relations Commission was established by the SBF board of directors, aiming to verify the possible existence of gender gaps in the academic environment of physicists and implement policies to solve this problem. Currently called Gender Working Group (GTG, in Portuguese), it presents here a critical diagnostic concerning key aspects directly related to social markers of difference faced by physicists.

This paper is organized as follows: after we explain how the data were obtained, the analyses are divided into four separate subsections: the profile of the respondents, motivation and difficulties during their studies and along their careers, the problem of moral and sexual harassment in the community and the job market available for physicist and high school teachers. A summary and final remarks are then presented and the questionnaire is displayed in the Appendix.
II. DATA AND METHOD

The survey presented to the SBF members [25] was open for responses from July 3 to September 21, 2018 and consisted of various sets of questions, most of them in multiple choice format, to facilitate the participation of respondents as well as data collection and analysis. A window for free comments was also available alongside most questions. In Appendix A, the translation of this questionnaire (initially posed in Portuguese) is presented. The survey was built in GoogleForms to be filled anonymously.

After discarding a very low number of incorrectly filled forms (less than 1%), the number of valid ones was 1695. From this set, multiple choice answers were counted within different groups characterized by specific social markers.

III. DATA ANALYSES

A. Profile of the respondents

In Table I we show the composition of the population of 1695 respondents, with respect to their education level (highest attained academic degree). Notice that the majority are graduate people, i.e., 66% and 19% hold a PhD and a Master degree in Physics (or related areas), respectively, while 9% hold a degree in Physics Education or Bachelor degree in Physics (or related areas), and 6% are undergraduate students that have only finished high school studies. These values are compatible with the records of the SBF about the composition of members with annuity payment on time, also shown in the table. The proportion of respondents is a bit larger amongst affiliates with doctoral degree and lower amongst undergraduate students (hence, with HS degree).

| Degree          | Respondents | SBF Members |
|-----------------|-------------|-------------|
|                 | number      | percent     | number      | percent     |
| High School     | 104         | 6 %         | 505         | 13 %        |
| Bachelor        | 67          | 2 %         | 279         | 5 %         |
| Physics Education | 94           | 7 %         | 59          | 4 %         |
| Master          | 314         | 19 %        | 708         | 18 %        |
| Doctoral        | 1116        | 66 %        | 3234        | 60 %        |
| Total           | 1695        | 100 %       | 3875        | 100 %       |

TABLE I. Composition of respondents according to academic degree, compared to the composition of SBF affiliates.

Table I displays the median age (central value) and quartiles (to give a measure of how data are scattered), for obtaining the academic degree. Table III presents the median age for some subgroups, showing that some groups take a longer time to attain the highest degree.

The composition of the community with respect to sex, ethnicity, gender and sexual orientation is presented in

| Degree                     | Q1 | Median | Q3 |
|---------------------------|----|--------|----|
| Bachelor                  | 22 | 23     | 25 |
| Physics Education         | 23 | 25     | 28 |
| Master                    | 25 | 27     | 30 |
| Doctoral                  | 29 | 30     | 33 |

TABLE II. Age at which respondents attained their degree. The median, as well as the first and third quartiles are shown.

| Degree                     | Subgroups |
|---------------------------|-----------|
|                            | All | Female | Male | Black | Parda | White |
| Bachelor                  | 23  | 24     | 23   | 23.5  | 25    | 23    |
| Physics Education         | 25  | 25     | 24   | 27.5  | 25    | 23    |
| Master                    | 27  | 26     | 27   | 27    | 28    | 26    |
| Doctoral                  | 30  | 31     | 30   | 31    | 31    | 30    |

TABLE III. Median of the age to attain each level, within different subgroups.

Fig. I. Among the respondents, 30% declared to be non-white and 9% preferred not to answer or classify themselves. This information is not available in SBF records. For comparison, in Brazil, the percentage of non-white people reaches 54% [8]. Apart from that, these color/race statistics produced by the IBGE (Brazilian Institute of Geography and Statistics) show that Brazil is not a racial democracy at all; on the average, white people in Brazil have the highest salaries and face less unemployment [8].

Among the respondents, 32% were female (slightly above 27-28% female community members). Noticeable percentages of people that answered the survey declared themselves either as homosexual or with “other sexual orientation” (12.5%), while 4.7% of the respondents were non-cisgender. That is, the majority of the respondents were white heterosexual men, as previously observed in other scientific communities [6, 11, 15]. It means that scientists who identify themselves as LGBT are minority in physics and, consequently, can feel themselves marginalised in different ways. In addition, previous international studies have shown that the campus environment can be quite LGBTphobic, specially for transgen-der individuals [20, 21]. It is also worth noting that in Brazil, for instance, the life expectancy of a transgender individual (measured in 2013) was less than half that of the Brazilian population [22, 23].

Concerning geographical origin (place of birth) and current residence, the matrix in Fig. 2 displays the number of people in each State of Brazil (identified by a two letter code and ordered by increasing latitude of its capital). The population is concentrated in the South and Southeast regions and there is also a nucleus in the Northeast above Pernambuco (PE). One also observes that there is little mobility of physicists in Brazil in general, probably due to availability of many universities in each State. The matrix highlights migration towards and from the States of So Paulo (SP) and Rio de Janeiro (RJ), as
FIG. 1. Profile of the respondents according to sex, ethnicity/color, gender and sexual orientation.

denoted by the vertical and horizontal darker lines containing those States; while the other two more populated States of Minas Gerais (MG) and Bahia (BA) contribute predominantly with emigration rather than immigration. A large mobility is also observed within the three States of the South (i.e., RS, SC and PR), alongside SP and RJ in the Southeast region, and also within a few states in the Northeast with epicenter at PE.

Figure 3 shows the composition of people that attained each degree according to sex (top) and ethnicity (bottom). It is noticeable that women are the majority of respondents with a high school degree and among first year undergraduate students, however their relative presence tends to decrease amongst those that finish the undergraduate stage (both Bachelor and Physics Education). At the level of graduate studies, the same trend is observed, with decreasing proportion of women finishing Doctoral studies than Master ones. These profiles outline what is called “Scissors effect” [6, 11–14].

Concerning race/ethnicity, a similar pattern can be observed for black and parda [24] people in Fig. 3 (bottom). Black people are 40% when they enter the university, but this percentage decreases as the highest achieved
level increases [15]. Instead, the percentage of those self-declared white and “other” increases.

A noticeable feature is that there are more people from underrepresented categories (both in the cases of sex and race) with a degree in Physics Education than with a Bachelor degree in Physics. This may be related to the necessity to attain a degree that allows to enter earlier in the job market, although high school teachers in Brazil are comparatively badly paid. Another trace of these underrepresented groups is that their proportion with Master degree is higher than with Bachelor degree, but similar to the proportion with degree in Physics Education, suggesting that despite the initial choice for the Education carrier, they finally opt to follow graduate studies.

B. Motivations and difficulties

The survey also aimed to identify the motivations for choosing a career in physics and the difficulties encountered to pursue the studies and the career.

The respondents were asked to indicate the level of identification (very much, little or not at all) with several possible motivations for choosing physics. The alternatives presented in the list were not excluding, so that multiple choices could be selected.

Figure 4 shows the histograms of the number of responses, for each motivation and level of identification. The three main motivating factors are: ease in mathematics at school, affinity for physics at school, and desire to take part in the progress of science. Socioeconomic aspects, such as future salaries and social recognition, rarely appear as career main motivations. It was also asked whether models of scientists in the literature, cinema or family environment provided a motivation to pursue a career in physics. In most cases the answer was negative, as can be seen in Fig. 4, perhaps due to the absence of positive models.

Concerning difficulties encountered along the studies and career, respondents were asked to identify (in a given list) the factors that negatively influenced the studies or the carrier, as well as the factors identified as cause of discrimination felt by the respondents in the environments of study or work. The respondents were also requested to indicate the presumed causes of discrimination suffered by colleagues in the study and work environments, whenever observed or taken knowledge of.

Figure 5 shows the histograms of number of (non-excluding) answers. It puts into evidence that the main difficulty is related to the socioeconomic origin. Even in the subgroup of those who marked “Other”, there are various specifications related to social or economic issues. As an example: necessity of work, family needs, flaws in the education, living far away from the university.

It is noteworthy that a large percentage of respondents have already observed or are aware of discrimination of colleagues in the study (lilac bar) and work (light blue bar) environments, with respect to diverse issues: sex, gender or sexual orientation, race or ethnicity, socioeconomic status, geographical origin, child care and religion. This stands in contrast with the own perception of the interviewees of feeling discriminated, which may be related to the fact that those who suffer more are underrepresented in the community, hence in the population of respondents.

In fact, for instance, amongst women, 46.7 % indicated a negative influence or discrimination due to sex, while that percentage falls to only 1.2 % for men. In Table IV we present details for the more numerous categories of
FIG. 5. Causes of difficulties. Number of (non-exclusive) responses for each factor associated to negative influence or discrimination of the respondent or colleagues given in the caption.

race/ethnicity, where we show the percentage of people in each group that identified some of the listed causes as having a negative impact. It is evident that parda people feel a more negative impact than white people with respect to the listed possible causes, a portrait which is even worst for black people.

![Graph showing causes of difficulties](image1)

| Causes                  | Race/color | Socio-econ. | Religious | Geographic |
|-------------------------|------------|-------------|-----------|------------|
| White                   | 6.4 %      | 18.6 %      | 4.6 %     | 0.5 %      |
| Parda                   | 7.7 %      | 32.9 %      | 7.9 %     | 28.8 %     |
| Black                   | 45.5 %     | 49.4 %      | 14.3 %    | 31.2 %     |

TABLE IV. Percentage of people (within each group) that felt negative influence or discrimination due to the causes in the first row.

C. Harassment

As one of the main difficulties encountered, the issue of harassment deserves a very careful discussion.

The general percentages of respondents reporting to be victim of sexual or moral harassment are summarized in Fig. 6. Almost 12% of respondents reported having suffered sexual harassment, while astonishing 38% felt to have been victim of moral harassment.

![Graph showing harassment](image2)

We also analyze the percentage of Yes and No responses within each category of race/ethnicity and sex/gender, in order to identify the more vulnerable ones. Table V exhibits the characterization of the universe of those who reported having suffered (or not) sexual harassment (12% in the total population). The percentage of Yes answers is much higher within the female group (32%) than in the male group (2%). Comparing the different subgroups of the female universe, the answers are rather homogeneous, except for the yellow color female group.

![Graph showing proportion of people reporting harassment](image3)

| Ethnicity/Color | Sex | %Yes | Yes | No |
|-----------------|-----|------|-----|----|
| Black           | Female | 14   | 23  | 38 |
| Indigenous      | Male | 1    | 3   | 25 |
| Parda           | Female | 28  | 60  | 32 |
| White           | Male | 114  | 233 | 33  |
| Yellow          | Female | 1   | 16  | 6  |
| Other           | Male | 3    | 16  | 15 |
| Prefer not to classify | Female | 8   | 22  | 27 |
| Prefer not to answer | Male | 0    | 3   | 0  |
| Total           | Female | 169 | 365 | 32 |
|                 | Male | 28  | 1127 | 2 |

TABLE V. Number and percent of people who reported having suffered sexual harassment, within the subgroups of race and sex. Composition of respondents according to academic degree, compared to the composition of SBF affiliates.

Table VI shows the corresponding values of the case of moral harassment, where 38% of respondents answered Yes. In this case, the numbers are alarming also in the male group (31%), but among females, the numbers are
even higher (52%). In all subgroups of the female universe, the percentages of Yes answers are higher than in the whole population. In the male universe they are smaller except in the black and “other” subgroups.

| Ethnicity/Color | Female | Male |
|-----------------|--------|------|
|                 | Yes    | No   | %Yes | Yes | No | %Yes |
| Black           | 19     | 18   | 51   | 25  | 15 | 63   |
| Indigenous      | 3      | 1    | 55   | 5   | 1  | 50   |
| Perma           | 42     | 46   | 52   | 48  | 81 | 66   |
| White           | 180    | 167  | 52   | 52  | 202| 493  |
| Yellow          | 7      | 10   | 41   | 2   | 16 | 11   |
| Other           | 4      | 4    | 50   | 10  | 6  | 63   |
| Prefer not to classify | 19 | 11 | 50 | 33 | 64 | 34 |
| Prefer not to answer | 2 | 1 | 50 | 3 | 12 | 20 |
| Total           | 276    | 258  | 52   | 357 | 798| 31   |

TABLE VI. Number and percentage of people who reported suffering moral harassment, within the subgroups of race and sex. Composition of respondents according to academic degree, compared to the composition of the community of SBP affiliates.

| Sex, Gender, Orientation | Sexual | Moral |
|--------------------------|--------|-------|
|                          | Yes    | No %Yes | Yes | No | %Yes |
| Female, Cis, All         | 161    | 351    | 31  | 265 | 247 | 52 |
| Female, Non binary, All  | 3      | 3      | 50  | 6   | 6   | 100 |
| Male, Cis, All           | 25     | 1073   | 2   | 334 | 764 | 30 |
| Male, Other, All         | 1      | 6      | 14  | 4   | 3   | 57  |
| Male, Not to classify, All | 1     | 24     | 4   | 9   | 16  | 36  |
| Female, Cis, Heterosexual| 134    | 310    | 30  | 219 | 225 | 50  |
| Female, Cis, Bisexual    | 15     | 19     | 44  | 19  | 15  | 56  |
| Female, Cis, Homosexual  | 4      | 14     | 22  | 11  | 7   | 61  |
| Female, Cis, Not to classify | 5 | 5      | 50  | 6   | 4   | 60  |
| Male, Cis, Heterosexual  | 21     | 971    | 2   | 294 | 698 | 30  |
| Male, Cis, Bisexual      | 0      | 22     | 0   | 9   | 13  | 38  |
| Male, Cis, Homosexual    | 4      | 62     | 6   | 28  | 38  | 42  |

TABLE VII. Sexual and moral harassment by category of sex, gender identity and sexual orientation. Only categories with at least one response are shown. "All" refers to all categories of sexual orientation.

In Table VII the numbers represent the total of respondents about sexual and moral harassment in each subgroup of gender and sexual orientation. The bold columns highlight the percentage of Yes answers. Only cases with more than five answers are shown. This table also puts into evidence the higher percentages of sexual and moral harassment in the non-cisgender population. Although the absolute numbers of non-cis populations are not very large, some aspects are striking. This is the case, for example, of the non-binary female population, where all the six women report having suffered bullying and half of them sexual harassment. In the case of the male population, four of the seven respondents in the “other” category reported having suffered bullying. This proportion of 57% is almost twice that observed in the male population of cisgender men. The percentages of moral and sexual harassment are systematically higher in the non-heterosexual (both female and male) populations, except for case of cisgender-homosexuals. In general, the data point to a higher incidence of moral and sexual harassment in populations that differ from the majority response profile regarding gender identity (cisgender majority) and sexual orientation (heterosexual majority).

D. Job market

Next analysis refers to the insertion of the physicists community in the labor market.

The question about professional occupation allowed multiple choices. This enables a combination of various responses, including high school (HS) teacher, university researcher or lecturer, temporary job (substitute, hourly, etc.), permanent job, job in a company or industry, autonomous, scholarship holder, or “without work or scholarship”.

![FIG. 7. Distribution of occupation of the respondents. The initials in the abscissa axis correspond to the following categories: T/R-HE = teachers and/or researchers in higher education institutions, SH = scholarship holders, MO = multiple occupations, WW/WS = without work nor scholarship, T-HS = teachers at high school.](image)

Table VIII summarizes the occupational profile of respondents of the questionnaire. Almost half of the answers were from people who are teachers and researchers in higher education. Of those who reported having multiple occupations, the most common combination refers to people who are high school (HS) teachers and univer-
We now take a closer look at the subgroup of people working in higher education. This subgroup is numerically representative (almost half of the total) and is considered a privileged group in the universe of SBF members. The reason is that the career of higher education lecturers offers higher salaries than the HS teacher career so that people do not have to accumulate activities as declared by more than 12% of the community and already discussed above. In this universe, 95% has a doctorate, 29% are female, which is slightly lower than the percentage of female respondents (which is 32%).

In the clipping of color and race, there is a clear privilege of self-declared white respondents over self-declared parda and black respondents: 67% of the respondents are white and only 16% parda and 4% black.

When the question of children is evaluated, there is an important difference between the universe of female and male respondents. In addition to the direct data presented in the table that indicates that male with children, who are in higher education is 15% higher than the total of respondents, there is another important aspect: male and female with at least one child represents, respectively, 65% and 44% of the total respondents. This difference suggests that female lecturers or researchers in higher education institution needed or chose to give up having children more than male physicists did.

### IV. SUMMARY AND FINAL REMARKS

In this paper we have presented the results of a survey applied in the community of physicists who are members of the Brazilian Physical Society (SBF), with the main goals of addressing the following questions: How diverse is the physics community? What attract people to follow this career? Which are the main difficulties to become a physicist? To what extent is sexual and moral harassment a problem in this community? How are physicists placed in the labor market? In this section we highlight some of our findings.

The first striking point is that the Brazilian Physical Society is not diverse in any way: it is made up of men (68%), white (61%), heterosexual (88%) and southeastern (50%) people. Moreover the diversity decreases with the progression in the career: percentages of women and black people is higher among under-graduated students than at the PhD level.

We have asked about the motivations to study physics and identified that there are two main drives to pursue this career: the ability to handle math and physics at school strongly influences this decision for 68% of the respondents, and around 62% of the respondents point to the hope of contributing to the progress of science. Approximately 80% of people attribute little or no influence of “social or financial recognition” for choosing a career in physics. These results point to a lack of recognition of scientific careers in the Brazilian society.

Concerning the difficulties in career advancement, socioeconomic problems were identified as the main obstacles at the beginning of the career. Other factors received a low number of answers but this seems to be associated to the fact that they are important only for minorities, as shown in Table [V].

A worrying result concerns the very high percentage of moral harassment in the physics community: 38% of the respondents reported to have suffered moral harassment. Among them, 52% are female and 31% male. In terms of sexual harassment, the total percentage is 12%. Normalizing this by the sex of the respondents, we identified that 32% are female and 2% male. In general, there is a higher incidence of moral and sexual harassment in populations...
away from the majority response profile regarding gender identity (cisgender majority) and sexual orientation (heterosexual majority). These expressive percentages are in line with recent international reports [16, 19].

We note that recent studies have identified an extremely high concentration of mental problems in academia: in [17], the authors reported that graduate students are more than six times as likely to experience depression and anxiety as compared to the general population. Moreover, they find that both transgender/gender-nonconforming and female graduate students are significantly more likely to experience anxiety and depression than their male graduate student counterparts. The relationship between the high concentration of sexual and moral harassment with the mental problems in academia remains to be proven, but certainly these results are an alert for the institutions.

About 7% of the respondents declared to be carriers of specific disabilities. The survey showed that they tend to progress only slightly slower than the other respondents. Further studies and more specific surveys should be carried out to investigate more deeply other aspects possibly neglected in the present work.

Finally, our survey allowed us to investigate some characteristics of the labor market for physicists in Brazil. We have identified that most of the respondents who have a PhD in physics are employed: only 3.5% of doctors who responded are out of work. On the other hand, 12% of physicists work in more than one place and also there are 37% of undergraduate students without scholarships. By studying in detail the population who is unemployed or without scholarship, a bias in terms of color or gender was not found. However, we did identify that 60% of men working in higher education have children, while only 40% of women do. This expressive difference suggests that more women had to give up motherhood rather than man had to give up fatherhood, which is similar to the data reported in [18].

Although we recognise that some effort has been made in Brazil to increase the number of underrepresented people in academic environments over the last 15 years, extra commitments are still required in dealing with the social exclusion and apartheid system in sciences, specifically in physics, where the numbers reveal high levels of inequality. We hope that the results presented and discussed in this paper can serve for our community to be aware of the current scenario and for policymakers to take decisions towards the improvement of diversity, equity and inclusion.

V. APPENDIX - QUESTIONNAIRE

The Gender and the Underrepresented Working Groups of the Brazilian Physical Society (SBF in Portuguese) have been working towards a more inclusive and egalitarian physics community in Brazil. In order to know better the diversity of the physics community in what concerns age, race, ethnic origin, sexual orientation and special need issues, we invite you to answer this questionnaire. Our aim is to collect information that can contribute to the promotion of actions and policies that help decrease the access, career and promotion barriers, specially of those historically underrepresented groups in our community. All answers will be treated with anonymity. We thank your participation.

DEMOGRAPHIC CHARACTERIZATION

- Year of birth (4 digits):
- Brazilian State (2 letters) or country of birth (3 letters):
- Brazilian State (2 letters) or foreign country (3 letters) in which you currently reside:
- Do you have children? How many?
  - I do not have
  - Yes, 1
  - Yes, 2
  - Yes, 3
  - Yes, 4 or more
- If you have children, when were they born (in relation to the doctoral period)?
  - Before
  - During
  - After

ACADEMIC TRAINING

- What is the maximum academic level you have completed?
  - High school
  - Graduation
  - Bachelor’s degree
  - Master’s degree
  - Doctorate degree
- Year of completion of the highest level (4 digits):

PROFESSIONAL OCCUPATION

- Indicate all options that apply:
  - High school teacher
  - Higher education researcher or teacher
  - Temporary job (temporary teacher, hourly, etc.)
  - Effective job
  - Work in company or industry
  - I work autonomously
– Scholarship holder (types of scholarship: initiation to research, Master’s, Doctorate and post-doc)
– Without work or scholarship

COLOR OR RACE
• What is your color or race?
  – Yellow
  – White
  – Indigenous
  – Parda
  – Black
  – Other
  – I prefer not to classify myself
  – I prefer not to answer
• If you have answered “other”, please specify.

SEX AND GENDER
• What is your sex?
  – Female
  – Male
  – Other
• If you have answered “other”, please specify.
• What is your gender identity?
  – Cisgender woman (1)
  – Cisgender man (1)
  – Transsexual / Transgender woman (2)
  – Transsexual / transender man (2)
  – Non-binary (3)
  – Other
  – I prefer not to classify myself
  – I prefer not answer
• If you have answered “other”, please specify.
  (1) I you identify yourself with the sex assigned at birth. (2) If you have another gender identity other than that assigned at birth. (3) If you do not define your gender identity within the binary system man - woman.

SEXUAL ORIENTATION
• What is your sexual orientation?
  – Heterosexual
  – Homosexual
  – Bisexual
  – Pansexual
  – Asexual
  – Other
  – I prefer not to classify myself
  – I prefer not to answer
• If you have answered “other”, please specify.
• Do you have any disability? Which one?
  – No
  – Low or abnormal vision
  – Blindness
  – Deafness
  – Physical
  – Intellectual
  – Global Developmental Disorder (2)
  – Other
  (2) Autism, Rett Syndrome, Heller Syndrome, Asperger’s Syndrome or Global development without further specification.

INDICATE HOW MUCH YOU IDENTIFY YOURSELF WITH THE FOLLOWING MOTIVATIONS TO CHOOSE THE PHYSICS AREA:
• Affinity for physics at school
  – Very
  – Little
  – Not at all
• Easiness for math at school
  – Very
  – Little
  – Not at all
• Ease at passing the entrance exam
  – Very
  – Little
  – Not at all
• Close model (e.g., relative, friend, teacher)
  – Very
  – Little
  – Not at all
• Model at the cinema
  – Very
  – Little
  – Not at all
• Model in the literature
– Very
– Little
– Not at all

• News in the media (outreach program)
– Very
– Little
– Not at all

• Remuneration
– Very
– Little
– Not at all

• Social Recognition
– Very
– Little
– Not at all

• To participate in the progress of science
– Very
– Little
– Not at all

• Other
– Very
– Little
– Not at all

• If you have answered other, please specify.

DETECTING DIFFICULTIES

• In comparison with your colleagues, how fast did you advance in your studies to reach the maximum level you have accomplished?
  – Faster
  – Same pace
  – Slower
  – I do not know

• In case your advancement was slower than the others, what do you think it was its main cause?
  – Age
  – Sex
  – Gender or sex orientation
  – Race or ethnic origin
  – Geographical origin
  – Disability
  – Religion
  – Socioeconomic vulnerability
  – Chronic disease
  – Time to take care of small children
  – Time to take care of other family members
  – Marital situation
  – Does no apply

• In comparison with your colleagues with the same degree, how fast did you advance in your professional career?
  – Faster
  – Same pace
  – Slower
  – I do not know
  – Does no apply

• From the following reasons:
  – (1) influenced my studies negatively;
  – (2) influenced my career negatively;
  – (3) it was a discrimination motive during my studies;
  – (4) it was a discrimination motive at my employment;
  – (5) I have already observed or have been aware of the discrimination of colleagues on the studies environment;
  – (6) I have already observed or have been aware of the discrimination of colleagues on the employment environment,

indicate all the options that apply to you:
  – Age
  – Sex
  – Gender or sex orientation
  – Race or ethnic origin
  – Geographical origin
  – Disability
  – Religion
  – Socioeconomic vulnerability
  – Chronic disease
  – Time to take care of other family members
  – Marital situation
  – Marital status
  – Time to take care of small children
  – To be/have been a university entrance quota beneficiary
  – other

• If you have answered other, please specify.
• In cases of discrimination, was there any support from the colleagues or the Institution to solve the problem?
  − Never
  − Yes, in some cases
  − Always
  − I do not know
  − Does not apply

• Do you think that the role played by the Institutions in the case of discrimination should be more active than it currently is?
  − Yes
  − No
  − Perhaps

• Have you ever suffered sexual harassment from someone hierarchically superior than you (boss, supervisor, teacher)?
  − Yes

• In cases of sexual harassment, please explain what happened.

• Have you ever suffered moral harassment from someone hierarchically superior than you (boss, supervisor, teacher)?
  − Yes

• In cases of moral harassment, please explain what happened.

• Please, give suggestions or information that you believe to be relevant and were not contemplated in this survey.

VI. ACKNOWLEDGMENTS

The authors thank all anonymous respondents for answering the survey.

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[24] In Brazil, there is a common distinction between people who self-declare themselves as black, with a darker tone of skin and parda, with lighter skins resulting from miscegenation of white and black people.

[25] The survey was advertised by e-mails sent to the SBF members but, as its anonymous character was preserved, we cannot guarantee that people from outside the community have not replied.