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Innovative Approaches for Organizing an Inclusive Optics and Photonics Conference in Virtual Format

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Citation: de las Heras, A; Gómez-Varela, A.I.; Tomás, M.-B.; Perez-Herrera, R.A.; Alberto Sánchez, L; Gallazzi, F.; Santamaría Fernández, B; Garcia-Lechuga, M.; Vinas-Pena, M; Delgado-Pinar, M.; et al. Innovative Approaches for Organizing an Inclusive Optics and Photonics Conference in Virtual Format. *Optics* **2023**, *4*, 156–170. https://doi.org/10.3390/opt4010012

Academic Editor: Javier Gamo

Received: 26 December 2022
Revised: 24 January 2023
Accepted: 3 February 2023
Published: 15 February 2023

Abstract: The COVID pandemic is forcing the renewal of scientific conferences, offering opportunities to introduce technological and inclusive developments. Our analysis focuses on the implementation of inclusive practices for female and early-career researchers in a virtual scientific conference. This organization approach was applied in the XIII Spanish Optical Meeting (RNO2021), which was also characterized by avatars interacting in an online metaverse. The effectiveness of inclusive policies and novel technological tools was evaluated using the participation data and a post-conference survey. Our study reveals the high impact of inclusive actions and a strong interest in the scientific community to explore conference advances.

Keywords: gender and science; virtual conference; optics and photonics; metaverse experience; RNO2021

1. Introduction

Scientific conferences are an essential component in the dissemination of scientific work. Equally important is the development of professional networks and collaborations that occur during these events. The COVID pandemic has forced most of the conferences to be postponed or to go virtual in order to guarantee safe health conditions for participants. Hence, since 2020 we have experienced an abrupt transition toward online events in different platforms, which can be categorized in videoconferencing or 3D virtual environments. On the one hand, the videoconferencing option allows a speaker to present the results to a large number of attendees, whose experience is passive and comfortable with the speaker's camera, the presentation slides and chatbox. However, the interaction between the attendees is limited to their presentation time or a chat channel. On the other hand, 3D virtual environments offer an immersive approach with an avatar that moves and interacts

with other participants within a metaverse. In this second category, which demands larger computational resources and software development, one-to-one interactions between the attendees or small groups conversations are possible during the whole conference. Thus, the participants in the 3D environment have an active attitude, and similar network opportunities to a face-to-face meeting. The technological gap can be surpassed and several scientific conferences have successfully taken place in diverse online platforms [1–6].

Whereas face-to-face meetings allow for a natural interaction among participants, the environmental footprint associated with travel is unsustainable for massive international conferences [7–10]. In terms of ecology, comfort, resource management and time saving the alternative of a virtual format arises as a promising scenario if providing enough communication channels for both scientific and personal exchanges.

Even more important than technological innovations is to provide effective inclusive measures. Scientific conferences need to increase the presence of women among the organizing and scientific committees, speakers, poster presenters and attendees. Ideally, everyone in the scientific community should have the same opportunities to be involved in scientific conferences simply to preserve the universal character of scientific research and prevent leaks of talent. Still, the gender gap in scientific events is yet to be addressed [11,12]. Indeed, it is a transversal problem affecting disparate fields that women are under-represented in conferences [13–15]. Moreover, the gender imbalance is typically increased or more visible at central program sessions such as plenary and invited talks, where paradoxically, the organizing committees can easily apply an inclusive perspective to achieve diverse panels. In general, such problems are often the result of a missing inclusion perspective in organizing and scientific committees. We should also note that the female under-representation is accentuated in STEM areas (science, technology, engineering, and mathematics), where women are a minority among the scientific community and thus, the gender bias is even more important [16].

Another aspect when organizing inclusive scientific conferences is the difficulty for students or early-career researchers to be initiated in scientific conferences and to give visibility to their work. The participation of young researchers is conditioned by the access to funding for registration and travel expenses [7]. Since each research group may not afford to cover the expenses for all the PhD students and postdoctoral researchers, it can prioritize the presentation of certain results or condense the entire presentation in a single person in charge. In this sense, a low registration fee and a significant number of travel grants encourage the participation of the young research community. For a person initiating the research career, the attendance and participation at a technical conference is a way of having a broader view of the research that is being done at the frontiers of knowledge, knowing the challenges and approaches beyond their research group, practicing oral communication skills, and building their own networks. This educational point of view is important to be considered. Besides, the organization of presentation awards as a merit-based recognition with a particular focus on early career researchers can help them to gain certain visibility.

In this article, we analyze the policies followed to set an inclusive, transversal, online program for the Spanish Optical Meeting, known by its acronym in Spanish as RNO. The RNO is the triennial conference of the Spanish Optical Society (SEDOPTICA) that has been held for more than 30 years. Each RNO brings together professionals from the community of Optics and Photonics in Spain to present the latest scientific and technological advances in these fields. This last edition, the RNO2021, was held on 22–24 November 2021 in a virtual format for the first time. The organization of the RNO2021 was entrusted to the Women in Optics and Photonics Committee of SEDOPTICA, the youngest SEDOPTICA committee (founded in 2018), whose more active members and board are early-career female professionals. Thus, the organizing committee was formed by researchers in early or intermediate career stages from different institutions, and with 75% of female representation. Such an organizing committee decided to explore creative solutions to tackle the problems of traditional scientific conferences. Then, the impact of the applied innovations is studied through an exhaustive participation analysis and a post-conference survey.

Noticeably, the RNO2021 was organized from a gender perspective covering the whole conference structure through the following direct actions: (i) a high visible representation of women in organizations and scientific committees, oral and poster contributions, awards, world-leading women plenary speakers, etc; (ii) incorporating gender issues as a conference topic; (iii) bringing gender discussions to a roundtable with distinguished female researchers. Our goal was to maintain the high-quality standards of the conference with special emphasis on creating a peer inclusive congress attractive to women and early-career researchers, who are typically obscured in technical conferences and workshops. Moreover, increasing the participation in the young scientific community is indirectly linked with a higher participation of women, since most female researchers are in initial and intermediate stages of the scientific career [17], due to gender barriers leading to well-known problems such as the "leaking pipeline" for higher positions [18], "the glass ceiling" [19] or the "Matilda Effect" [20].

Next, we detail the conference innovations, analyze the participation at the RNO2021 in terms of gender and career position, and summarize our conclusions. The purpose of this article is to share our organization experience, paving the way toward novel perspectives in scientific conferences by addressing the gender gap, giving space to early-career researchers and exploring a virtual format.

2. RNO 2021 Conference Format

2.1. Conference Structure

The Women in Optics and Photonics committee had previously developed different online activities to connect women researchers in these scientific areas [21]. The virtual format for the RNO was an unexplored territory, and the response of the members of the society was unknown. Taking this into account, SEDOPTICA entrusted this committee with the organization of the RNO2021, given the skills of its members and the required characteristics of the committee. We could therefore speak of an example of an effect known in the literature on organizational relations as the "glass cliff", in which women are more likely to reach leadership positions in situations of high risk of failure, even if the risk is not reluctantly noticeable [22].

The Women in Optics and Photonics committee accepted to be in charge of the organization of the congress. In order to face the challenge with greater guarantees, the designed organizing committee was clearly different from the traditional structure: (i) it was established that there would be three chairwomen of the organizing committee at an intermediate stage of their scientific careers (instead of the traditional version in which the principal investigator of a research group was the only chair); (ii) people from different groups and areas were incorporated into the organization, so that, altogether, they could attend different online congresses organized by other entities and, therefore, learn different solutions to typical challenges of virtual conferences; (iii) the commitment with positive gender policies led to female researchers occupying prominent roles (plenary speakers, chair of the prize committee, etc.); (iv) the presence of early-career and intermediate researchers in the organizing committee favored young attendees' participation and visibility.

The conference structure followed previous RNO editions. The different fields of optics and photonics are represented by different symposia: Imaging Techniques, Vision Sciences, Nanophotonics, Quantum Optics and Nonlinear Optics, and finally a Miscelanea symposium that includes Color Science, Optoelectronics, Spectroscopy, Teaching and Dissemination and, for the first time, Gender Issues. In this last edition, some of the symposia were held in parallelum, to favor a compact schedule of three days. The sessions were scheduled in compatible times both for Europe and America.

The RNO2021 scientific committee was divided in two levels: a general scientific committee, and a specific committee for each one of the symposia. The general scientific committee was formed by the chairs and vice-chairs of each one of the SEDOPTICA committees, sixteen people in total. Nevertheless, each symposium had its own scientific committee, who selected the oral presentations. This form of organization facilitated

the review task, guaranteed the true expertise of the reviewers, and ensured a certain independence from the conference organization.

Following the same line that previous editions, we also had two high-level plenary talks, invited by the organizing committee. In this edition, Prof. Jannick Rolland (University of Rochester) and Prof. Jelena Vuckovic (Stanford University) presented two top-level plenary talks. Although the number of plenary talks were only two due to the reduced duration of this RNO edition, two female speakers with an undoubtedly excellent international reputation were chosen. This action follows the recently published Document of Recommendations to the SEDOPTICA Committees to avoid gender bias [23]. This document aims to stop gender discrimination into the events organized by SEDOPTICA. Moreover, the selection of these two female speakers was intentional, to send out and loud the message that all-male panels are unacceptable today. Common excuses such as the absence of women in the field or fitting the high-level required standards are not justified.

The RNO2021 was funded via the habitual ways, including private donations of sponsors. Each sponsor had a stand on the virtual platform, allowing them to interact with the assistants. Most of the communications with the participants were done via call voices, in order to imitate as much as possible the in person interaction. The same idea was followed for the meeting area, with several tables where assistants could join for voice calls and discussions.

2.2. The Choice of a Suitable Virtual Platform

For the first time, this RNO was held online due to the COVID pandemic. As members of the organizing committee, we dealt with the challenge of adapting a face-to-face meeting to an online format. Even if different software tools have been developed or readapted for the urgent need to have online conferences, some of their capabilities are not fully established to satisfy both an immersive metaverse experience and a user-friendly interface with a simple intuitive installation. Three-dimensional virtual environments enable a networking activity very close to the face to face situation. However, not all the attendees are familiar with this novel metaverse option and the preinstallation can suffer from hardware incompatibilities. Therefore, to reduce the risk of technical problems and avoid training times for speakers and participants, we merged the 3D Secpholand platform [24] with Zoom [25], a conventional well-known video conference software. The plenary talks, oral symposium contributions and roundtables took place in Zoom, which was integrated with the auditoriums in the 3D platform Secpholand. Then, the posters, enterprise stands, scientific meetings between attendees (B2B meetings), and, in general, the networking activity took place exclusively in Secpholand.

The Secpholand platform developed by Secpho [26] provides a complete set of tools for a scientific conference. It includes auditoriums for plenary sessions and symposia (see Figure 1), rooms for posters (see Figure 2), meeting rooms, stands for the sponsors and tables to host B2B meetings with the companies. The metaverse of Secpholand allows creating your own avatar with whom you will go through the conference environment as if you were in a face to face event.

Figure 1. Snapshots of the Secpholand platform during RNO2021 showing the auditoriums. Some stands of the sponsors are visible behind the auditorium in the top image.

2.3. Virtual Poster Presentations Mimicking a Face to Face Interaction

This type of 3D virtual environment has been selected mainly for the possibilities of interactivity with other attendees, since networking options are significantly increased compared to the standard video conference format at online meetings. What is especially attractive is how posters are presented, which for us was very important given the high number of poster contributions and considering that many of the presenters were early-career researchers, sometimes at their first conference participation. The poster room is configured like a real poster room (see Figure 2), with rows of posters clustered by topic and including many visual and interactive options. Moving your avatar around, you can see the posters, zoom on them to check them out and especially, when entering in the dedicated area next to the poster, a voice call with the other people in the area is started, giving the possibility to talk with the authors and other attendees in front of the poster. Thus, the platform is able to reproduce a traditional poster session in an online platform reaching more than 2600 poster visualizations.

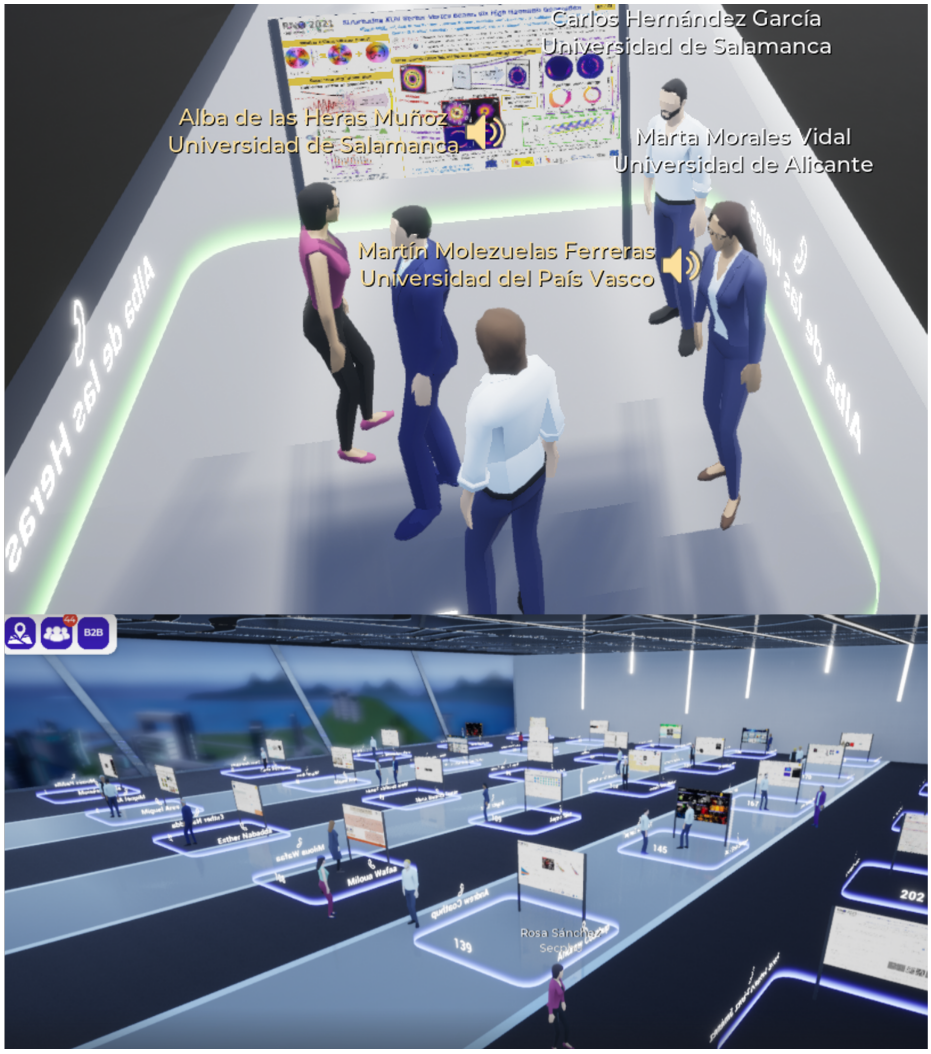

Figure 2. Snapshots of the Secpholand platform showing a poster session.

2.4. Possibilities of Diverse Roundtable Discussions

As a novelty regarding previous editions, the RNO2021 included the celebration of a series of roundtable discussions. Roundtable discussions offer an advantage over conventional academic conference presentations as they allow for more interaction between the participants, also promoting the participation of the attendees through specific questions related to the general topic. Therefore, roundtable discussions were scheduled within the RNO2021 environment to boost the networking opportunities among the attendees, an aspect that can be diminished in virtual events. They were focused on different relevant themes for the current development of science, and in particular, on optics and photonics. The general objective of roundtables was to gather a relatively small number of participants to exchange ideas and experiences on a given topic.

The major goal of the first roundtable discussion at RNO2021 was to share the experiences on scientific mobility carried out in the Ibero-American area of four invited researchers, during both predoctoral and postdoctoral stages. Scientific mobility is a concept usually linked to research careers development, and considered a key tool to gain international enriching experiences. We counted with the following speakers in this roundtable: Professor Manuel Philipe (Portugal), President of Ibero-American Network in Optics (RIAO), who first provided an overview on how scientific societies contribute to the promotion of mobility and the strengthening of international collaborations; Ana Gargallo (Spain), Doctor in Vision Science, who was beneficiary of a mobility program during her PhD, doing a stay in Colombia; Cristian Mejía Cortés (Colombia), Doctor in Fundamental

Physics, who carried out his PhD studies in Spain thanks to a fellowship from the Spanish government; and Doctor Lorena Velázquez (México), associate professor at the Universidad de Guanajuato and with international postdoctoral experience in Spain. Discussions on the importance of scientific collaboration between research groups, higher education centers and scientific societies for the advancement of Ibero-American research and strengthening of collaborations were raised during the roundtable. It was also discussed how the mobility of women is affected in a major extension by caring responsibilities than men, limiting their scientific mobility opportunities and therefore impacting in their career progress.

The second roundtable, entitled "Captains of science, leaders in spite of the system", counted with four distinguished female researchers who shared with the audience of the RNO2021 their research path and their vision of science. Women are under-represented in STEM careers, a fact that becomes even more evident in upper echelons of both academia and industry. In this regard, the exposure to female role models working in scientific fields is important for the perception of early-career researchers, as well as to reduce the stereotypes about science careers and gender skills gaps in general. Therefore, this roundtable discussion was organized with the main aim of providing the younger participants at RNO2021 the opportunity to interact with successful and inspiring women working in the optics and photonics fields. The invited researchers were: Prof. Laura Lechuga, full researcher at the Spanish Research Council (CSIC), who has received among other distinctions the Spanish National Research Prize in 2021; Dr. Silvia Soria, full researcher at the Consiglio Nazionale delle Ricerche (CNR, Italy), Prof. Crina Cojocaru, lecturer at University of Barcelona (Spain); and Marta de la Fuente, technical director of ASE Optics Europe.

A third roundtable was focused on the outreach activities in optics and photonics carried out by Ibero-American student chapters. These chapters are commonly formed by college-level undergraduate or graduate students and funded and promoted by scientific societies, such as OPTICA (formerly OSA, the Optical Society of America) [27] and the SPIE (The International Society for Optics and Photonics) [28]. The aim of including such a roundtable in the RNO2021 was to visibilize the prominent role Student Chapters play in making science accessible to a wider audience, and encouraging scientific vocations. In this roundtable discussion we counted with the representatives of different Ibero-American students chapters: Ana Karen Reyes, President of SPIE-CIO Guanajuato Mexico; Nicole Recalde, Vicepresident of OPTICA USFQ Ecuador; María Fernanda García Avellaneda, President of Capítulo Estudiantil GOMa UD Colombia; Alba de las Heras, President of OSAL chapter Salamanca Spain; Liliana Sousa, President of OPTICA chapter Aveiro Portugal; and Samuel Serna, OPTICA Ambassador Colombia.

2.5. Motivation and Visibility Strategies for Early-Career Researchers

Another novelty in this RNO edition is the RNO2021 Award. We have included in the scientific conference an award sponsored by the Women, Optics and Photonics Area of SEDOPTICA and Secpho. Its aim was to promote and encourage scientific research in optics and photonics fields. Concretely, we wanted to visibilize early-career researchers by giving a primary RNO2021 Award and two secondary awards, all three with a monetary prize and a certificate. This award was oriented toward undergraduate and graduate students, predoctoral researchers and recent postdoctoral researchers. They had to register in the congress and present a scientific contribution as first authors.

The evaluation process for the awards was divided in three steps. The first one was done by expert committees evaluating the scientific content and impact of the abstract. During the congress days, the same expert committees evaluated the defense of the contribution and the scientific content again. Finally, the finalists —resulting from the highest marks in the previous evaluations— presented a 5 min talk explaining their research in a special session for all the attendees. Immediately afterwards, the attendees voted to choose the top 3 contributions for the RNO2021 Award. So participants at RNO2021 had an active role in the selection process of the RNO2021 Award.

Remarkably, we had a gender-balanced participation in this award competition, and 60% of female researchers among the finalists, so, in this case, it was not necessary to introduce positive actions to equalize the representation of both genders. In the end, the primary RNO2021 award was obtained by a female predoctoral researcher. Our data regarding the participants in the RNO2021 Award indicates that both female and male researchers achieve excellent scientific levels.

Due to the aforementioned award and the reduced taxes to assist the congress for early-career researchers, the RNO2021 reached a huge participation of the young research community in optics and photonics. Note that this kind of congresses are a great opportunity for early-career researchers to communicate their research and to increase their network.

3. Participation Analysis and Discussion

3.1. General Attendance and Female Representation in RNO2021 Committees

The RNO2021 reached 252 attendees, which is in the order or even beyond previous RNO editions. One of the challenges faced by the RNO2021 organizing committee consisted in maintaining similar levels of attendance than previous in person national meetings. After more than a year of pandemic restrictions, we dealt with a moment of fatigue toward online events.

Among RNO2021 attendees, we note a high participation of female (42.5%) and early-career (46.5%) researchers. Gender-balanced representation was observed at all levels of the RNO2021: from the distribution of the organizing and scientific committees, to the participation and the awards across sections and symposia. The organizing and scientific committees were composed by 75.0% and 43.8% of women respectively, as shown in Figure 3. The distribution of the scientific committees varied across scientific areas, following similar trends to the committees of SEDOPTICA, with higher female representation for Imaging Techniques (100%) and Visual Sciences (66.7%). Opposite trends were found for Quantum Optics and Nonlinear Optics and Nanophotonics committees, both with 33.3% of women. In both cases, the percentage is a direct consequence of the lack of women in these two committees: Quantum Optics and Nonlinear Optics has an 18%, and Nanophotonics has a 35% of women currently associated in the committee [29].

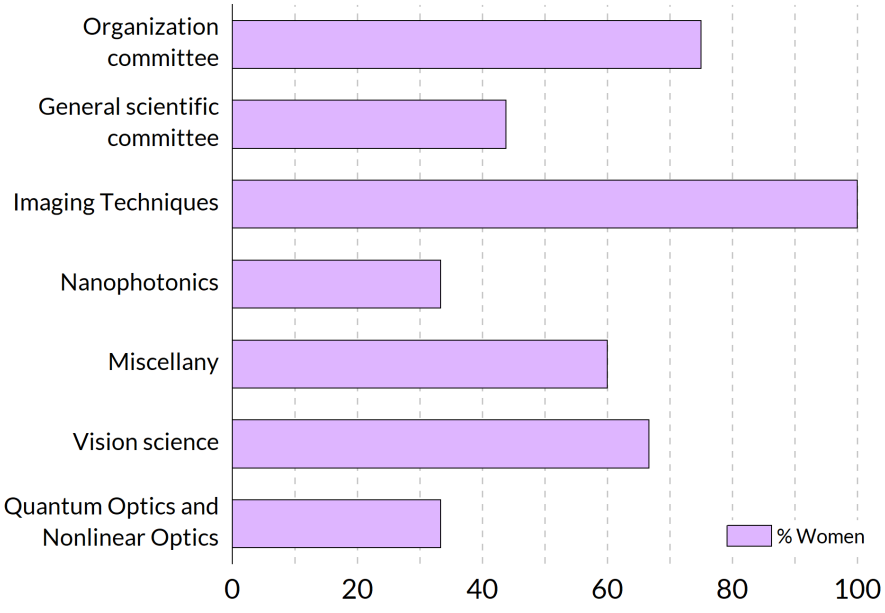

Figure 3. Percentage of women in the organization committee, general scientific committee and scientific committee of symposia.

3.2. Female Representation in Scientific Contributions

Figure 4 shows the percentage of women among presenting authors in different symposia at RNO2021. For each symposium, we distinguish between oral talks, poster presentations and total. Noticeably, the percentage of women in the symposium of Vision Science exceeds 50% both for oral (57.1%) and poster (71.4%) presentations. In our view, this fact is related with the high percentage of women in the Vision Science scientific committee, but also the particular inclusive effort of this committee to translate this representation into the scientific program. A similar observation applies for the symposium of Imaging Techniques, which also had a gender balance in all presentations (40% in orals and 50% in posters). Indeed, a high presence of women in the scientific committee does not necessarily imply a high percentage of women as presenting authors. As an example of this, we have the symposia Miscellany I (involving Color, Outreach and Teaching topics) and II (Gender Issues, Spectroscopy and Optoelectronics), with a low percentage of women in oral talks (33.3% or below) and differing percentages in poster presentations (65% versus 30%). This data evidences the need for a gender perspective in scientific conferences, and particularly in scientific committees, in order to at least compensate for any gender bias.

Additionally, Figure 4 shows a lower participation of female presenting authors in the symposia of Nanophotonics and Quantum Optics and Nonlinear Optics. In these two scientific areas which are more related with technology or the fundamentals of physics, but not with biomedical applications, women are often a minority [29,30]. Still, by considering a gender perspective and following paritary recommendations [23], we can avoid that women minorities are under-represented. Also, we can encourage their visibility with a balanced participation in oral talks versus poster presentations like occurs in Nanophotonics, or even by having a 50% participation in the oral contributions of Quantum Optics and Nonlinear Optics. Remarkably, in the data displayed in Figure 3, the percentage of women as oral speakers overcomes the total percentage of women when this total percentage is 33.3% percent or below. In contrast, when the total participation of women is near the 50% or beyond, the percentage of women oral speakers is below the total percentage.

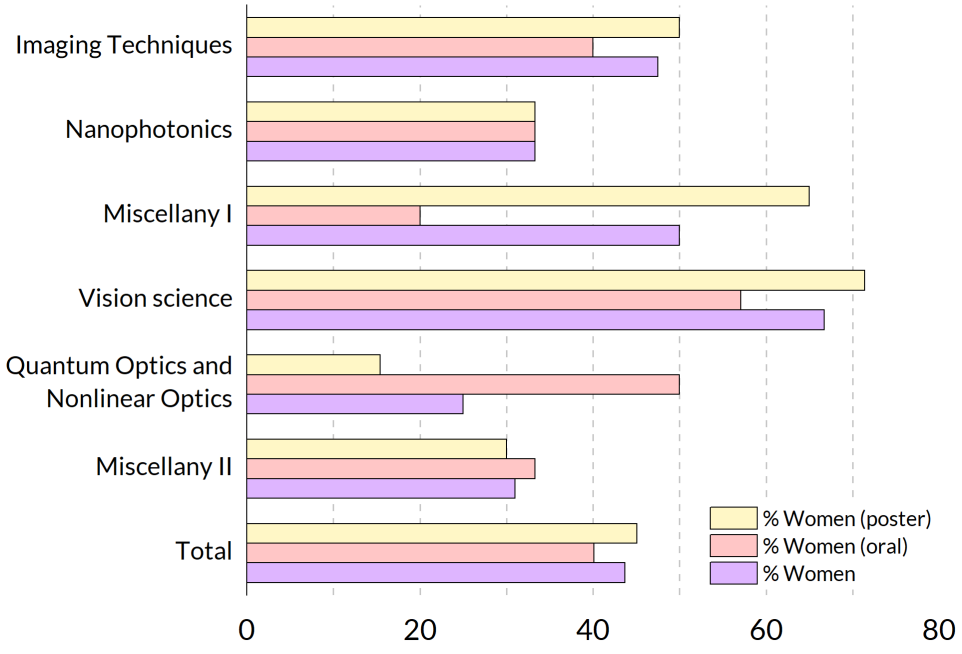

Figure 4. Percentage of women as presenting authors in posters and oral talks (by topic).

3.3. Early-Career Representation in Scientific Contributions

One of the main objectives in this RNO2021 edition was to encourage an active participation of early-career researchers. Noticeably, students (predoctoral fellows are also included in this group) had a significant participation not only in poster sessions but also in oral presentations. As shown in Figure 5, in the majority of the topics the participation of the students in oral and poster sessions has been higher than 50%. More precisely, the students' posters at the Imaging Techniques symposium have been the 70% of their total contributions, and the students' talks the 60%. The Vision Science Symposium also had a similar percentage of students, 67.9% for posters and 57.1% for oral presentations. On the contrary, the other symposia, overcome the student percentage in oral contributions in comparison to the poster ones. In Nanophotonics the 83.3% of the oral presentations have been from students and the 61.1% for the posters. In the Quantum Optics and Nonlinear Optics symposium, students participated in 90% of the talks and 69.2% of posters. For Miscellany II the oral contributions from students has been 66.7% and the poster contribution 25%. Lastly, Miscellany I is the topic in which the least number of students have applied (30% in oral talks and 25% in posters).

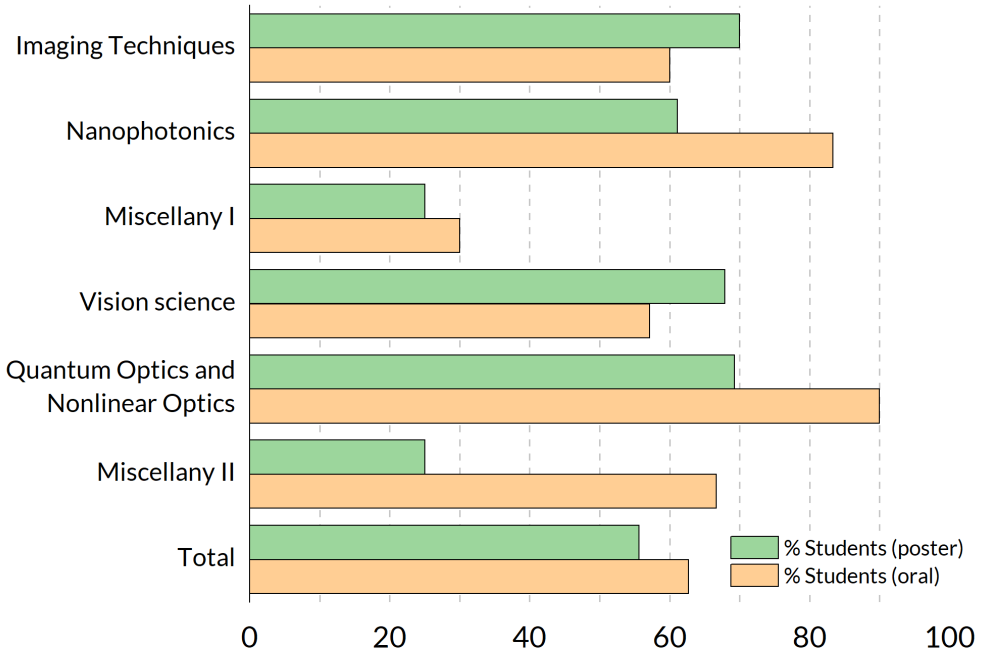

Figure 5. Percentage of students as presenting authors in posters and oral talks (by topic).

We also analyze the oral contributions presented in each one of the symposia, attending the academic stage in Figure 6. We divide the experience in four different categories: PhD Student (yellow), PhD no older than 5 years (purple), PhD with an experience between 6 and 10 years (green) and PhD with more than 10 years experience (orange). We find that in most of the symposia, the general trend was to raise the profile of PhD students. In particular, the Nanophotonic symposium had 100% of PhD students presenting oral talks, followed by Quantum Optics and Nonlinear Optics and Imaging Techniques symposia. Vision Science had a 50% of Phd students, and the only one which fell below 50% was Miscellany I.

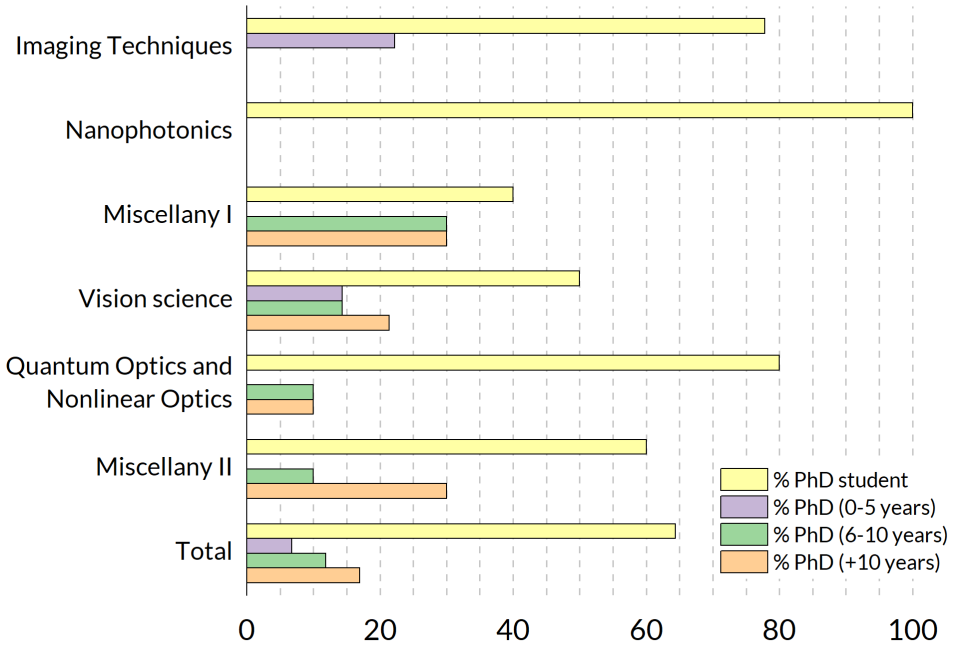

Figure 6. Career stage analysis of presenting authors in oral talks.

3.4. Geographical Distribution of the Contributing Authors

Figure 7 shows the countries in which contributing authors of RNO 2021 work (not nationality). As expected, Spain makes up for the majority of authors (568). The figure, thus, shows mainly the location of collaborators, among which the highest number is from European countries (78, excluding Spain), and that the number of contributors from countries other than Spain makes up for about 11.3% of the total. It is important to notice the 27 authors from Ibero-American countries, which were specifically targeted in the call for papers, given the ties with the Spanish community and the common language. Indeed, most of the contributors from Ibero-American locations were not just collaborators but presenting authors.

3.5. Post-Conference Survey Results

Figure 8 presents some data extracted from a post-conference satisfaction survey, to which 85 attendees—about 1/3 of the total—answered. The organization and experience were generally positively reviewed. 83.5% gave a positive review of the organization (from good to excellent), while less than 6% considered the organization poor. The experience itself was also positively reviewed (80% good or better). From the answers and comments it is clear that not everybody had the same approach to the online platform and virtual environment, whose interface was not immediately user-friendly for everyone. At the same time many people appreciated the possibility for interaction with the other participants and the companies, which is not always achievable in online conferences. Finally, it was remarked as positive the push for inclusivity and visibilization of women speakers and the platform for open discussion on transversal topics during the roundtables.

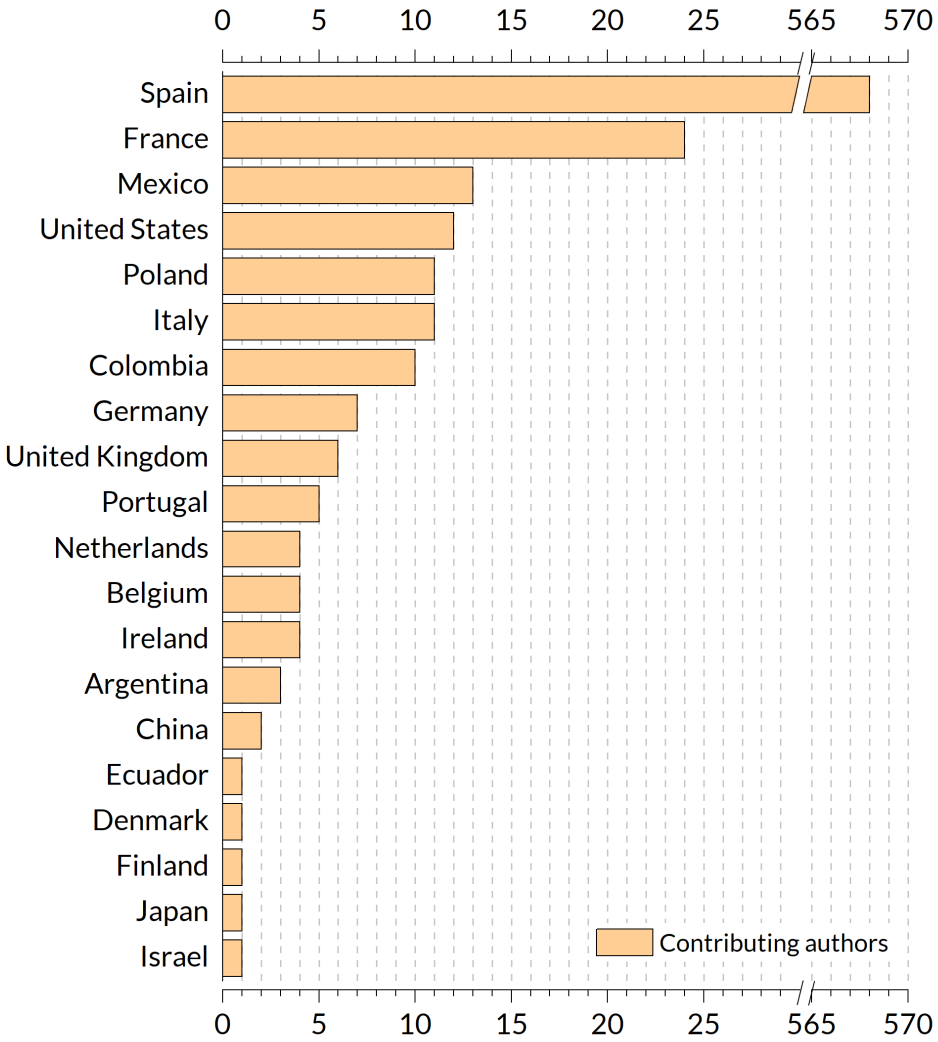

Figure 7. Countries where contributing authors at RNO2021 work.

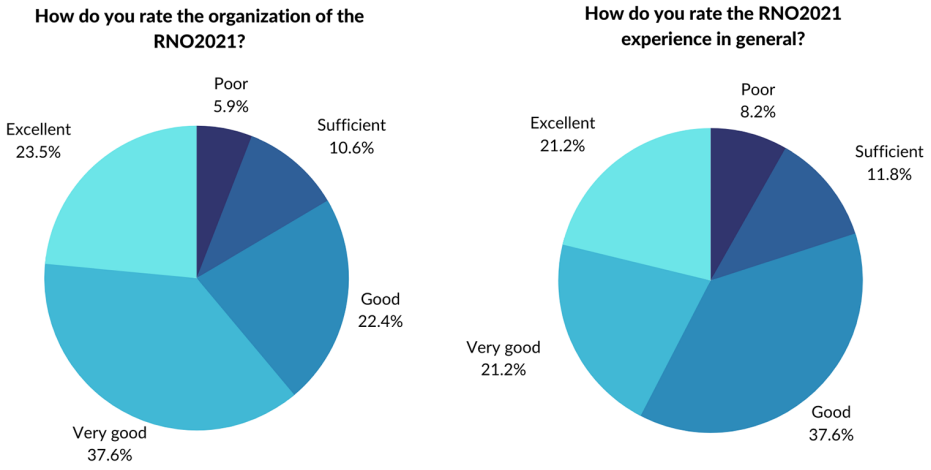

Figure 8. Post-conference satisfaction survey rating the organization and the overall experience at RNO2021.

4. Conclusions

In this work, we analyze the organization experience of a virtual congress from a gender perspective, with added emphasis on the participation of early-career researchers. This conference was the Spanish Optical Meeting (RNO2021) held on 22–24 November 2021 in a virtual format for the first time. The context of the COVID pandemic urged the need to transform the in-person RNO meeting into an online format. These circumstances implied higher uncertainties in the success of the conference—being an example of a glass cliff—and opened the opportunity to include both organization and program innovations. We chose a hybrid videoconference-metaverse experience as a way of combining the advantages of both virtual modalities. This novel format was a pioneering experience to explore alternative ways of scientific interactions to in-person meetings offering similar networking opportunities. The 3D virtual environment was particularly interesting for poster presentations, and reduced-group interactions, whereas using a conventional video conference is more accepted by speakers in oral contributions, plenaries and roundtables, since it avoids training times or installation problems.

Bringing roundtable discussions as another novelty of this RNO edition implies including career issues as an opportunity to identify challenges and perspectives of the scientific system itself, which is an important subject of discussion. Then, encouraging the participation and visibility of early-career researchers at RNO2021 was important from an educational point of view for improving their professional development, but also because the programmatic and technological innovation approaches were mainly focused on the youth, who tend to adapt to change more easily. A low registration fee, the virtual format and the creation of the RNO2021 award as an important novelty in this edition resulted in a high participation of early-career researchers, mainly PhD students. The RNO2021 was an incentive to value their research, and to give them the opportunity to show their work to the largest community of experts in optics and photonics in Spain.

Remarkably, the active inclusive measures led to a high participation of women at all levels of the scientific conference, thus demonstrating that gender inequalities can be compensated with gender-based politics. The awareness of gender issues allowed us to implement active measures in the organization of a scientific conference with a high-positive impact in women representation at all levels of the event, including plenaries, orals, posters, roundtables, awards and scientific committees. Moreover, attendees assed particularly positive the push for gender equality, the organization and the overall conference experience in a final anonymous survey, whereas more disparate opinions arise regarding the virtual format.

These innovation strategies, together with the efforts to reach the Ibero-American community in Optics and Photonics despite the national character of a RNO, led to high participation rates. The conference was attended by 252 people, which is in the order or even beyond previous editions.

Author Contributions: All the authors were members of the RNO2021 organizing committee and contributed to the conceptualization, methodology and implementation of the organizational approach of the scientific conference. Data curation was primarily performed by V.G.-F., M.D.-P. and F.G. The original draft was written by A.d.l.H., A.I.G.-V., M.-B.T., M.D.-P. and V.G.-F. Visualization contents were created by L.A.S. and R.A.P.-H. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The data was analyzed anonymously, with the consent of all the participants. The study was conducted in accordance with the Declaration of Helsinki.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data are available upon reasonable request to the authors.

Acknowledgments: We acknowledge SEDOPTICA and the RNO2021 sponsors for supporting the organization of the conference. We also thank Secpho for the images provided of Secpholand shown in Figures 1 and 2, and for their technical assistance during the event.

Conflicts of Interest: The authors declare no conflict of interest.

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