Subject: Working Group for Gender Equity under the aegis of the Astronomical Society of India

Summary: We propose here the setting of a Working Group for Gender Equity under the aegis of the Astronomical Society of India (ASI). This will be the first such group to be set up in Asia. This Working Group will collect and analyze data about the representation of women in Indian Astronomy, conduct gender-sensitization talks and workshops, provide mentorship as needed, maintain a webpage with relevant resource material, and contribute towards the creation of an equitable workplace environment for the members of the Indian Astronomical community.

Rationale: It is becoming clear that even though a large fraction of undergraduate and graduate students are female, their relative fraction drops dramatically when it comes to the Faculties of Research Institutes and Universities pursuing Astronomy in India **[1, 2,** also see **page 4].** This phenomenon is not unique to India and has been found to be prevalent around the world to varying degrees. While specific reasons may differ due to societal factors in different parts of the world, there is a growing realization that **unconscious bias** in the workplace **[3,4,5]** can be playing an important role in the low representation of women, over and above the local societal factors. To create awareness of these issues and move towards a better gender balance in Institute and University positions at the various academic levels, several major Astronomical societies have formed dedicated working groups. There is the Committee for the Status of Women in Astronomy (CSWA) under the American Astronomical Society (AAS), IAU Women in Astronomy Working Group, Women in Astronomy chapter under the Astronomical Society of Australia (ASA), Institute of Physics (IOP) Project Juno, the Women in Physics Working Group of the International Union of Pure and Applied Physics (IUPAP) **[6,7,8,9,10]**, and others.

The CSWA of the AAS has been monitoring statistics on female members at different levels of employment for over two decades. Proactive efforts made by the CSWA to increase awareness and create an equitable work environment, as well as the efforts of various other US organizations, have started showing visible results: the fraction of female assistant professors has nearly doubled in the past ten years (from 15% in 2003 to 27% in 2013), becoming for the first time equal to the fraction of female postdocs in the pool (28% in 2013) **[11].**

The project Juno of the IOP, UK has seen similar visible results. Between 2007/2008 and 2011/2012 the proportion of permanent female academic staff in physics cost centers rose from 11.2% to 15.6%. The proportion of female professors rose from 5.4% to 7.0%, female senior lecturers/lecturers rose from 14.8% to 20.3% and female researchers rose from 17.3% to 19.2% **[12].**

It is clear therefore that the presence and actions of various Working groups are making tangible gains. Judging from the long time-scales that are involved in making substantial changes, it is imperative that we, the ASI members, take up this setting up of the working group with urgency.

History: The third session (the second formal session) on Gender Issues in Astronomy was held at the ASI meeting this year (2015) in NCRA, Pune. Apart from short talks on issues like "Unconscious Bias" and "Imposter Syndrome", this year we had a panel discussion on "Improving the Workplace for Gender Equity". Judging by the large turnout in both the formal sessions (close to a hundred participants in both IISER-Mohali and NCRA-Pune) and the active participation of the audience, it was apparent that astronomers find the gender equity issue important and relevant. The sessions were well attended by a large fraction of young people of both sexes. The gender ratio of the participants in the most recent session at NCRA was 60 to 40 in favor of men. The lack of statistical studies in India was remarked upon, and a general consensus for the setting of a working group on Gender Equity emerged from these sessions. Presentations from these sessions are currently hosted at http://www.ncra.tifr.res.in:8081/~sushan/

This Proposal: We propose here the setting of a Working Group for Gender Equity under the aegis of the Astronomical Society of India. As per our knowledge, this Group will be the first of its kind in Asia.

The possible functions of the working group would be:

1. Maintain the statistics on female members of the Astronomical community in India at various academic levels **[**e.g., European Commission's **13,** AAS's **14]**. Only through this exercise will we be able to gauge the current situation in India and trace our progress over the years through periodic evaluation.

As the Pasadena Recommendations for Gender Equality in Astronomy **[15]** rightly note "The measure of equal opportunity is outcome, i.e., gender equity will have been attained when the percentage of women in the next level of advancement equals the percentage in the pool."

2. Conduct gender-sensitization talks, sessions, workshops, inside and outside of the ASI meetings. Raising awareness is the first step towards establishing gender equity in our workplace.

3. Collaborate with and learn from other Indian organizations that have Women in Science chapters, like (i) the Indian National Academy of Science (INSA), (ii) the National Institute of Advanced Studies (NIAS), both with the Department of Science and Technology (DST), and (iii) the "Women in Science" panel for the Indian Academy of Sciences (IAS) **[16,17]**. These organizations have a wealth of resource materials

and extensive experience in conducting national conferences and training programs for women scientists.

4. Maintain a webpage with relevant resource material like presentations from meetings and written articles. Create new resource material including videos and posters, that promote gender equity in astronomy.

5. The working group members could provide mentorship as needed for young people entering the field of astronomy.

References:

[1] Delhi University statistics (www.du.ac.in/fileadmin/DU/.../Gender%20Audit%20Report_892010.pdf#)
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[12] http://www.iop.org/policy/diversity/initiatives/juno/juno-evaluation/file_62014.pdf
[13] European Commission's "Gender Equality Report", 2014 http://ec.europa.eu/public_opinion/archives/eb_special_439_420_en.htm#428
[14] AAS's http://www.aas.org/cswa/percent_tenured.html
[15] Pasadena Recommendations http://www.aas.org/cswa/pasadenarecs.html
[16] NIAS-DST Training program for Women Scientists http://nias.res.in/newsbriefsarchives.php?cat_id=6&curr_page=1
[17] IAS's http://www.ias.ac.in/womeninscience/

Statistics

Ratio of Female members in Indian Astronomy Institutes (2013)***

Using publically available online data for the year 2013 from eight Astronomy Institutes including IIA, IISc, RRI, NCRA, ARIES, TIFR-DAA, IUCAA and PRL, we find that the fraction of female faculty members varies between 0 and 23%, with an **average of 11%.**

The ratio of female students for seven of the eight institutes mentioned above varies from 11% to 50%, with an **average of 28%.**

**** The details are provided in a talk hosted on this webpage:* http://www.ncra.tifr.res.in:8081/~sushan/

Female/Male Ratio in Delhi University (Records primarily from 2007-2008)
www.du.ac.in/fileadmin/DU/.../Gender%20Audit%20Report_892010.pdf#

Students at Under Graduate Level

Medical Science: 997/(997+1164) = 46%
Mathematical Science: 3522/(3522+2069) = 63%
Science: 7901/(7901+5526) = 59%

Students at Post Graduate Level

Medical Science: 601/(601+744) = 45%
Mathematical Science: 814/(814+459) = 64%
Science: 1387/(1387+847) = 62%

Students doing PhDs

Medicine: 36/(36+38) = 49%
Mathematical Sciences: 238/(238+180) = 57%
Sciences: 420/(420+358) = 54%

Faculty Members

Lecturer/Senior scale
2005-2006: 74/156 = 47%
2007-2008: 78/164 = 48%

Readers
2005-2006: 96/248 = 39%
2007-2008: 107/254 = 42%

Professors
2005-2006: 69/258 = 27%
2007-2008: 70/251 = 28%

Signatories

1) Preeti Kharb, IIA
2) Sushan Konar, NCRA-TIFR
3) Niruj Mohan, NCRA-TIFR
4) Resmi L., IIST
5) Prajval Shastri, IIA
6) Nissim Kanekar, NCRA-TIFR
7) Dibyendu Nandi, IISER-Kolkata
8) Prasad Subramanian, IISER-Pune
9) Firoza Sutaria, IIA
10) Nandita Srivastava, PRL
11) Anuradha Gupta, IUCAA
12) Jasjeet Singh Bagla, IISER-Mohali
13) Ravinder Banyal, IIA
14) Shravan Hanasoge, TIFR
15) Manoj Puravankara, TIFR
16) Ravishankar BT, ISRO
17) Sankalp Gilda, BITS-Pilani