

Complimentary to all members

Vol. 47 No. 1

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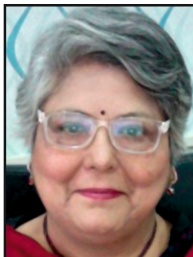
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Guest Editorial



This issue of *Physics News* brings to you a series of eight articles on a variety of physics topics, including the interdisciplinary area of biosensors, and the major facilities in which India expects to play a significant role, namely *LIGO*, and the *Indian National Gamma Array*. Another highlight is an article on the theorem of Emmy Noether, which is one of the profound and fascinating tenets of modern physics. The *Research News* feature includes reports of a major step forward in understanding the mysterious “bursts” of cosmic radio emission, and a path-breaking discovery in condensed matter physics from an Indian laboratory.

While the content of this issue is typical of *Physics News*, this issue is special because it has an all-female authorship.



Why was such a special issue deemed necessary?

The physics profession has among the largest of gender gaps. This is a global phenomenon that is manifested starkly in India as well. While the fraction of women among physics PhDs employed in Indian academia is approximately 30%, which is itself somewhat low, that fraction is far from matched in elite research institutions, academy memberships, and honours and awards. For example the median female fraction of faculty in astrophysics research institutions is about 10%! The fraction of 30% is not reflected even in the proportion of women authors in *Physics News*, which has ranged from 0% to 10% since 2010. Clearly the profession is far from being gender-neutral, quite contrary to its professed objectivism and adherence to meritocracy.



The consequences of this problem are multiple. First, the profession is seriously handicapped by the loss of talent that results from gender bias, whether in research and teaching, invited and/or public lectures, leadership roles, or decision-making bodies. Second, it perpetuates the stereotype that a “typical” physicist is not female, which has a deep impact on growing minds at all levels from early education to tertiary education. Third, even the highly accomplished women physicists of the past and the present are turned into the Wordsworthian “*Violets by a mossy stone half hidden from the eye!*” Many things we have taken for granted, from wrinkle-proof material to cold Bose-Einstein Condensates, from supersymmetry to dark matter, from symmetries to symmetry breaking, were the work of women. Some basic physical principles, such as Boyle's and Rayleigh-Jeans laws, are known among students of physics by the names of their male originators, yet the equally fundamental idea of correspondence between symmetry and conservation laws is not as well known by Noether's name.

We intended to demonstrate that it is quite normal for women physicists to write overview articles for audiences such as that of *Physics News*. Moreover, this issue comes as one of a trio alongside special issues of *Resonance* and of *Current Science*, which we hope will trigger reflection among *all* practitioners of the profession on the concerns raised above. Bringing the “*Violets*” into the open valley is a task particularly germane to a magazine like *Physics News*.

In October 2016, our proposal to have a special issue with an all-female authorship received solid endorsement from the IPA — a demonstration that accelerated progress lies ahead. The special issue became a reality thanks to the steadfast support of the editorial team, the fast and thorough reviewing by the anonymous reviewers, and the contributions of the authors.

In fact, the authors who came forward to write for such a special issue should be particularly commended for the risk they took to identify themselves by their gender — because it is a risk, within a profession that typically stays clear of acknowledging (let alone critiquing) the social processes inherent in the practice of science, and looks askance at any efforts to bring about diversity. Diversity is the bedrock of excellence, and is therefore an important goal to strive for.

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