Proceedings of SAIP2016, the 61st Annual Conference of the South African Institute of Physics



Edited by Steve Peterson and Sahal Yacoob

University of Cape Town



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SAIP2016

Proceedings of SAIP2016, the 61st Annual Conference of the South African Institute of Physics

Hosted by the University of Cape Town

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Edited By Steve Peterson and Sahal Yacoob

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Message from the Conference Chairperson

The 61st Annual Conference of the South African Institute of Physics was held at the Kramer Law School, Middle Campus, University of Cape Town, from 4 July to 8 July 2016, under the aegis of the Department of Physics and the Department of Astronomy of UCT.

The conference was officially opened on 4 July by DST Chief Director Danny Adams after opening remarks by UCT DVC Research, Danie Visser, and SAIP President, Azwinndini Muronga. The conference was attended by 492 delegates. There were Invited Plenary talks by speakers from South Africa, Germany, Austria, the UK and the USA. These included the Gold Medal address by the 2016 winner, Prof. Manfred Helberg. In addition, there were invited addresses by the 2016 Silver Medal awardees Dr. Angela Dudley and Dr. Shazrene Mohamed. The Conference itself started on 5 July and was preceded on 4 July by two Winter Schools, on the topics "From the Smallest to the Largest Scales: Our Evolving Universe" and "The Biophysics of Cells and Macromolecules", as well as a Teachers Workshop to encourage school science teachers into the SAIP fold. A feature of the conference was the introduction of the Physics Bowl, a challenge between teams of university students, held on 7 July. A great time was had by all, with the winning team being from the University of Cape Town with second place going to the University of Limpopo. The Conference Banquet was held in the Jameson Memorial Hall on 8 July.

There were a total of 517 scientific contributions presented at the conference, of these 328 being oral presentations and 189 being poster presentations. Of course, the conference would not have been a success without the assistance and commitment of many people: those on the Organising Committee and in the Departments of Physics and Astronomy; the SAIP Division Heads and reviewers whose work has made these Proceedings possible; the SAIP Council and the SAIP Office under Brian Masara, with his team of Dr. Roelf Botha and Juan Grey who supplied vital IT support; and finally the invaluable assistance of the UCT Conference Management Centre under the guidance of Ange Bukasa.

Roger Fearick Chairperson: SAIP2016 Conference

Message from the Host Editors

As host editors of the 2016 SAIP Proceedings, our job was to supervise and manage the review process and publication of the conference proceedings. The entire process (from submission to publication) was governed by the SAIP Proceedings Guidelines with an effort to emphasize the presence of new scientific material in each of the published proceeding papers. The submission process was supplemented in 2016 by the addition of a Supervisor's Agreement to assist students in producing high-quality submissions.

All submissions were first checked for formatting. Submissions that failed to meet these requirements were returned to authors for their layout to be corrected. Once layout review was complete, it was followed by the peer-review process. The peer-review process followed the SAIP Proceedings Guidelines, which requires that the content of each paper is reviewed by two experts with a PhD in the relevant area of research. If there was differing opinions between reviewers, a third reviewer was called upon to review the paper.

In theory, once a paper is submitted, its publication should be swift but, unfortunately, the reality has been very different. Publication of a proceedings requires as much the goodwill of reviewers as it does the patience of authors. Evaluating papers is onerous and many of our reviewers made commendable efforts to produce detailed and meaningful reports that we are incredibly grateful for. We particularly wish to thank the reviewers who took the time to comment on more than one paper.

We unreservedly apologize for the length of time required to publish these proceedings and are thankful to the many authors who tolerated the delay as we worked to complete the review process. We received 180 papers from the 517 abstracts submitted to the 2016 SAIP Conference. 121 papers completed the required layout criteria and were passed on to reviewers for evaluation. Of these 121 papers, 74% were accepted for publication, a total of 90 papers are included in these proceedings.

In addition, the editors want to thank all authors for submitting their work to 2016 SAIP proceedings. The high-quality scientific content of these proceedings is a reflection of your hard work and the excellent Physics research happening in South Africa.

Special thanks go to the Local Organizing Committee for the 2016 SAIP Conference. Thank you Roger Fearick for your willingness and sacrifice to chair the committee; thank you Andy Buffler and Patrick Woudt for your leadership. And thank you to the rest of the committee members (Mark Blumenthal, Tom Dietel, Tom Jarrett, Gregor Leigh and Heribert Weigert) for the many things that you did. Lastly, thank you to the Physics department staff and students making sure all of the details were handled professionally and quickly.

We would also like to thank the Division Heads for their assistance in assigning appropriate experts for the papers in their fields and their willingness to deliver advice on content when asked.

The editors also thank the Review Panel for helping make the final push towards completion. Your help was invaluable in getting the last reviews and making those final decisions.

Lastly, we would like to thank the SAIP Executive Officer (Brian Masara) and the SAIP IT Team (Roelf Botha, Juan Grey, Lizzy Sathekge and Tebogo Mokhine) for their tireless efforts to support us and teach us the ins and outs of publishing this conference proceedings. Without your help, this would not have been possible.

Nicon-

Steve Peterson and Sahal Yacoob Host Editors for the 2016 SAIP Proceedings

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