Contribution ID: **316** Type: **Oral Presentation**

Non-specialist lecture: The new edition of the International System of Units: Introducing the SI Redefined: Counting Atoms, Single-Electron Tunnelling and Optical Atomic Clocks

Friday, 29 June 2018 11:20 (40 minutes)

The Metre Convention of 1875 established the metric scale as the universal system of measurement. In 1960 the General Conference on Weights and Measures (CGPM), under the Metre Convention, formally established the expanded metric scale as the International System of Units, universally known as the SI (from the French Système international d'unités). It has subsequently been revised from time to time in response to the requirements of users and advances in science and technology. The most recent and perhaps most significant revision in the SI since its establishment is expected to be approved in November 2018 by the 26th CGPM as documented in the draft 9th edition of the SI brochure.
The definition of the SI units will be established in terms of a set of seven defining constants. From the fixed values of these defining constants, expressed in the units of the SI, the complete system of units can be derived. These seven defining constants are the most fundamental feature of the definition of the entire system of units. A variety of experimental methods generally described by the Consultative Committees of the International Committee of Weights and Measures (CIPM) may be used to realise the definitions.
The presentation will outline the changes to the current SI, show what research have been conducted for the new realisations and highlight the practical implications for the Southern African community.

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Session Classification: Applied Physics

Track Classification: Track F - Applied Physics