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## INSTRUMENTATION AND MEASUREMENTS: PATHWAYS TO NEW SCIENCE AND TECHNOLOGY

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### Abstract

Developments of instruments and measurement techniques have always opened new areas of activity in engineering and technology. The examples in mechanical, electrical and other engineering branches are well known as also the new insights in numerous branches of sciences and medicine. A new pathway is currently being studied to redefine TEMPERATURE, known for over 300 years in terms of the Fahrenheit and Centigrade scales.

This measurement procedure depends upon an artifact, namely the properties of water. The new possibility is to connect TEMPERATURE to fundamental universal constants like the Gas constant, the Avogadro number and the Boltzmann constant. This will enable TEMPERATURE to be defined with greater accuracy, even in an alien world where water is not known.

The progress in this direction, made in the last four decades, using acoustic and microwave measurements will be reviewed. The further work to be done before a new definition is attempted to be introduced, in about a decade or so, will also be outlined.

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