

## Preface

Andrea Merlone

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A three-day workshop has been organized in September 2009 at the Istituto Nazionale di Ricerca Metrologica (INRiM), the Italian National Research Institute of Metrology, in Torino, Italy. The series started in PTB-Berlin for the first two editions, followed by LNE-INM in Paris. These events represent the key meetings for the scientists involved in the determination of the value of the Boltzmann constant for the redefinition of the kelvin. The 2009 Boltzmann workshop was enlarged with respect to the previous editions, both in terms of duration and topics. The workshop was a world-wide event, mainly sponsored by INRiM in cooperation with the iMERA+ and by the special Task Group on the SI of the Consultative Committee for Thermometry (CCT, WG4 TG-SI). The sessions took place at INRiM together with a series of satellite events: iMERA+ sessions, CCT WG4 meeting, round tables, subgroup meetings, and laboratory visits. About 70 people attended the meeting, from more than 20 institutions, over four continents, including BIPM staff.

This special issue contains selected papers presented during the workshop, that all have undergone a standard review process of the *International Journal of Thermophysics*. The presentations have been mainly concentrated on the physical and experimental aspects of the determination of the Boltzmann constant as the defined candidate for the redefinition of the kelvin, under the general idea of a new SI based on the fundamental constants of physics. The main topics were acoustic gas thermometry (AGT), dielectric constant gas thermometry (DCGT), laser-based Doppler width thermometry (DBT), and noise thermometry. All contributions were of a high scientific level being related to the most important metrological and physical research on such a fundamental constant and on the definition of kelvin as one of the seven base units of the SI.

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A. Merlone (✉)  
Istituto Nazionale di Ricerca Metrologica, Turin, Italy  
e-mail: a.merlone@inrim.it

As organizer of the Congress, I wish to emphasize the great opportunities provided by putting together one more time the world experts on this relevant subject of physics and metrology.

I would like to express thanks to the members of the international scientific committee of this Workshop and to all reviewers for valuable comments, suggestions, and relevant corrections. I am especially grateful to Dr. William M. Haynes, Editor-in-Chief of the *International Journal of Thermophysics*, for his large contribution, assistance, and help in publishing this issue. A special personal appreciation goes to Paolo Alberto Giuliano Albo, Francesco Moro, and Chiara Musacchio, as members of the organizing committee: a group of young researchers that played a fundamental role in the preparation and organization of this event.