



# Editorial to selected papers from the XXI IMEKO World Congress 2015

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Dear Reader,

in the second part of this issue, ACTA IMEKO publishes eight papers that were originally presented at the 2015 World Congress in Prague and that are here presented in their extended versions.

The first paper by Dušan Agrež, Damir Ilić and Janko Drnovšek considers the problem of estimating efficiently the parameters of a sinusoidal signal in the frequency domain. This is a very common issue in many practical measurement problems solved by means of numerical procedures. The paper provides both simulation and experimental results allowing the user to grasp the practical implications of estimating the amplitude, phase and frequency of a sampled and quantized sinewave.

The second paper by Leonard Klaus addresses the problem of estimating the parameters of a model used in dynamic torque measurements. Several estimators are considered including the least squares and maximum likelihood estimators. A procedure is then described and applied to a set of data obtained experimentally at the PTB, where the author works.

The third paper is the result of an international collaboration among researchers in the Egyptian, and German National Metrological Institutes and in the Faculty of Engineering of the Cairo University. It presents a new approach in force measurement standards that includes a force transducer having three adjustable capacities. The design and realisation of the prototype is described, also including results from a finite element analysis.

The fourth paper by Qiao Sun and Hong-bo Hu addresses the problem of low intensity shock acceleration calibration. The authors performed a pilot comparison study collaborated by four calibration laboratories, showing good compatibility between the obtained measurement results.

The fifth contribution by Xiao-ping Res et al. considers the issue of mass standard design and the difficulties associated to the inclusion of adsorption in the design models. The effects of sorption over time and its implications when measuring the standard mass are taken into account in this paper. Experimental results are shown that also include the effect of humidity on the sorption velocity.

The sixth paper by Jiří Přibíl, Anna Přibilová and Ivan Frollo considers magnetic resonance imagers and the analysis of the human vocal tract structure together with its dynamic shaping. The noise generated by the physical mechanisms excited by the interaction of the generated magnetic fields with the machine gradient coils is analysed experimentally in this paper.

The seventh paper in this issue is authored by Marija Cundeva-Blajer. It describes a framework for the design of a three-cycle University program focused on metrology and the results of an international collaboration addressing this aspect. It can be considered as a useful reference for all those involved also in educational activities.

The eighth paper by Nataliya A. Gavrilenko et al. describes the usage of an optical analytical method to detect chromium (VI) using polymeric sensors. Since chromium compounds tends to

be irritating and corrosive, finding a new method to detect their presence that is alternative to the usage of spectrophotometry widens the amount of available measurement techniques.

Let me take this occasion to remind everyone that ACTA IMEKO accepts freely submitted papers in all areas of metrology and not only extended versions of papers previously

presented at IMEKO conferences and congresses, as in the recent past. I encourage all authors in these research areas to consider our journal as the possible publication medium for their researches.

Have a fruitful reading of the third issue of ACTA IMEKO in 2016!