Special Issue on
Set-Membership Techniques and Their Applications
in *Transactions of the Institute of Measurement and Control* (TIMC)

Set-membership techniques and related interval methods are computational methods that can perform, in a natural way, nonlinear computations with sets of real numbers. They are at the core of guaranteed system solving methods that can prove the existence of a solution and, if the latter is not unique, compute the set of all solutions while taking into account all sources of uncertainty. The uncertainties are mostly described under the form of bounds because in practical situations bounds on measurements and/or model imperfections are often the only available information. These methods have direct applicability to a broad range of scientific areas from engineering, to financial and medical domains.

This Special Issue (SI) aims to present the latest advances in set-membership techniques and their applications in practical control systems. The proposed SI will provide a platform to exchange the new ideas and progress in the related areas, facilitating faster uptake of set-membership techniques and related interval analysis methods as well as addressing new challenges arising from practical applications. This will promote the theoretic research and practical applications in both the academic and industrial communities.

Papers concerning new theoretical developments (techniques and theory for representing, propagating, manipulating sets: ellipsoids, polytopes, zonotopes, intervals …) and practical applications for systems taking into account all sources of uncertainty are particularly welcome. Papers will be solicited thorough invitation only and will be selected from the best ones presented at Third International Symposium on Set Membership - Applications, Reliability and Theory (SMART), Manchester, September 2016.

Topics to be covered in this special issue include, but not limited to, the following

- Control
- Optimisation
- Positive invariant sets
- Fault detection & Isolation and Fault tolerant Control
- Stability for complex non-linear systems
- Validation and Verification
- Robotics and multi agent systems
- Reachability
- Computational aspects (implementation, algorithms for powerful computation including on-board and real time computational constraints, parallel computing…)

Author's schedule:

Submission of Manuscript	November 31, 2016
Notification of Acceptance	March 31, 2017
Final Manuscript Due	June 31, 2017
Tentative Publication Date	Autumn 2017

All submissions are subject to peer review, and acceptance will be limited to papers requiring only moderate revisions. Manuscripts should be submitted electronically online at http://mc.manuscriptcentral.com/timc. Please also send an electronic copy of their complete manuscript via email (PDF format preferred) to one of the Guest Editors listed below.

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