

# **Lecture Notes in Control and Information Sciences**

Volume 471

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Filippo Cacace · Lorenzo Farina  
Roberto Setola · Alfredo Germani  
Editors

# Positive Systems

Theory and Applications (POSTA 2016)  
Rome, Italy, September 14–16, 2016

 Springer

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# Preface

*Positive systems* are dynamical systems whose state variables are positive (or at least nonnegative) in value at all times. Such exceedingly simple definition is nevertheless full of far-reaching consequences both on theory and applications of dynamical systems. Moreover, positivity of variables is readily available information, stemming directly from the intrinsic nature of the phenomenon of interest. It is therefore not surprising that many researchers, coming from very different areas of dynamical systems and control, joined together in Rome, for the second time from 2003, to give rise to the fifth edition of the POSTA conference (Positive Systems Theory and Applications) in September 14–16, 2016. As a matter of fact, the most intriguing feature of the positive systems “community” is that it is *not* a community! If we look at it clearly, we see an intrinsically *open* group of people where members are not recruited on a permanent but on an occasional basis. In fact, a researcher may face a problem whose solution require to exploit “positivity” to be solved effectively (and often elegantly). This is an absolutely fascinating aspect of positive systems theory: a field of research fueled by contribution from any other field and, as such, and ever-expanding one. If we look at the titles of the talks presented, we will find a large heterogeneity of topics, ranging from epidemiology to anesthesia, from switched or fractional systems to communication systems and also a variety of deep theoretical problems such as the construction robust observers or stability analysis in the presence of time delays. As such, the POSTA conference offered a wonderful opportunity to establish research networks among scholars having similar interests related to positivity.

We all look forward to the next edition of the conference, to be held in Hangzhou (China) in 2018. Over the last two decades Chinese researchers have become very important contributor to positive systems research. We are excited by such historical initiative which will boost research in the field on both quality and quantity.

We wish to thank the International Program Committee for the outstanding work in reviewing the papers thus providing a substantial contribution to the improvement of the quality of the Symposium. Furthermore, we wish to thank the support

from Università Campus Bio-Medico di Roma who hosted the conference and especially all the participants to POSTA 2016 for making this meeting a success.

The final remark is dedicated to Profs. Maria Elena Valcher and Jean-Luc Gouzè for their availability, support to the initiative and for enriching the Symposium with their inspired lectures.

Rome, Italy  
December 2016

Filippo Cacace  
Lorenzo Farina  
Roberto Setola  
Alfredo Germani

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