

Special issue dedicated to Spyros Magliveras on the occasion of his 70th birthday

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Foreword

This issue of Designs, Codes and Cryptography honors Spyros S. Magliveras, a colleague and friend who over the last decades has been contributing to all three core areas defining the scope of this journal. The common theme connecting much of his work is the theory of finite groups, an area which soon after completion of his B.S. degree (in electrical engineering) attracted Spyros's attention, and kept its fascination ever since.

The submission deadline for this special issue was a few weeks after a conference celebrating his 70th birthday had taken place: at this meeting colleagues, students, and friends came together to present their current research and to celebrate Spyros's scientific achievements, which includes seminal work like the proof of existence of a non-trivial simple six-design in his 1983 joint paper with David W. Leavitt. We are glad that many conference participants have decided to contribute to this special issue through a paper submission, complementing the submissions from colleagues who did not have the chance to celebrate with Spyros in person.

In the call for papers for this special issue we asked for *submissions on topics that are connected to the scientific work of Spyros Magliveras*. In view of Spyros's most impressive track record, covering and connecting topics ranging from cryptology to design theory and electrical engineering, it comes to no surprise that the received submissions covered a wide spectrum of topics. All submissions were treated equally and underwent a peer-review process following the usual high standards of Designs, Codes and Cryptography. After a challenging selection process, 13 papers were chosen to be included in this special issue, and we are indebted to the reviewers whose comments, expertise and careful evaluation of

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submissions were invaluable for compiling this special issue. We want to extend our thanks to *all* authors of manuscripts submitted to this special issue, independent of whether their submission could eventually be included in the limited space of a paper collection like this.

From our personal experience with Spyros we know that working one-on-one with his Ph.D. students is of utmost importance to him, and we are glad to report that also papers co-authored by his Ph.D. students have made it into this special issue. Spyros's work is interdisciplinary in the true sense, and a single special issue cannot do justice to the great impact of his work. Nevertheless we hope that this compilation of scientific papers by various authors—including strong young researchers as well as renowned senior experts—gives at least some idea of the mathematical beauty of the subject areas to which Spyros devoted his scientific life:

- Cornelia Rößing and Leo Storme present for the case of odd q a spectrum result on minimal blocking sets with respect to the planes of $\text{PG}(3, q)$.
- An De Wispeleare, Joseph A. Thas and Hendrik Van Maldeghem give a characterization of the Grassmann embedding of $H(q)$ for the case of even q .
- Dieter Jungnickel and Vladimir D. Tonchev extend a result on the exponential growth of the number of 2-designs with the parameters of a classical point-hyperplane design $\text{PG}_d(n, q)$ with $d = n - 1$ to the case $2 \leq d \leq n - 1$.
- Sanjit Chatterjee, Darrel Hankerson, Edward Knapp and Alfred Menezes compare two aggregate signature schemes when asymmetric pairings derived from Barreto-Naehrig elliptic curves are used.
- Atefeh Mashatan and Douglas R. Stinson explore message authentication protocols in a setting where an authenticated narrow-band channel and an insecure broadband channel are available.
- María Isabel González Vasco, Angel L. Pérez del Pozo and Pedro Taborda Duarte discuss the security of the public key encryption scheme MST_3 when being instantiated with Suzuki-2-groups.
- Charles J. Colbourn explores the construction of covering arrays by means of the cyclic matrix, derived from discrete logarithms of entries in the addition table of a finite field.
- Marien Abreu, Gabriela Araujo-Pardo, Camino Balbuena and Domenico Labbate establish improved bounds for the maximum number of edges in a simple graph on n vertices that contains no circuit of length 4.
- Michel Huber considers a finite 2-homogeneous affine permutation group and proves that no non-trivial 5 -($v, k - 1$) designs exist that admit a block-transitive group of automorphisms being of affine type.
- Nidhi Singhi, Nikhil Singhi and Spyros Magliveras present new methods to derive logarithmic signatures for affine algebraic groups and prove the existence of minimal logarithmic signatures for some finite simple groups of Lie type.
- Ronald D. Baker, Gary L. Ebert and Kenneth L. Wantz develop and apply techniques to enumerate orthogonal Buekenhout unitals embedded in two-dimensional translation planes.
- Gábor Korchmáros and Nicola Pace exhibit a new infinite family of large complete arcs in the projective plane over a finite field of odd characteristic.
- Nicholas A. Newman and Chris A. Rodger present a solution to the problem of enclosing a λ -fold four-cycle system of order v into a $(\lambda + m)$ -fold four-cycle system of order $v + u$ for all positive integers m and u .

We are indebted to Spyros for numerous helpful discussions, insightful comments and pieces of advice kindly provided over the years—both on a scientific and on a personal level. We hope that reading this issue of Designs, Codes and Cryptography brings as much enjoyment to him and all other readers as did the process of compiling this paper collection for a very special colleague and friend. Happy birthday, Spyros—we look forward to your forthcoming discoveries!

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