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Guest Editorial

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► **To cite this version:**

W Cary Hufman, Jon-Lark Kim, Patrick Solé. Guest Editorial. Designs, Codes and Cryptography, 2022. hal-03833937

HAL Id: hal-03833937

<https://hal.science/hal-03833937>

Submitted on 28 Oct 2022

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Guest Editorial

W. Cary Huffman, Jon-Lark Kim, Patrick Solé

The present special issue is dedicated to Vera Pless, our beloved collaborator, advisor, and friend. Accounts of her biography and bibliography have appeared in several places [1, 2, 3, 4]. The topics of the articles that comprise the issue reflect the themes and trends of Vera long and fertile researcher career. As explained in some detail in [2] these consist more specifically of

1. self-dual codes, classification and constructions
2. identities on the weight distribution
3. computer algebra techniques
4. codes over rings
5. cyclic codes and relatives
6. decoding
7. combinatorial designs
8. cryptography

To begin with, Pless is remembered, amongst other things, for a class of self-dual ternary codes related to Hadamard matrices, called Pless symmetry codes. The paper by V.D. Tonchev revisits this classic favorite. Self-dual codes over large finite fields are explored in a paper of Choi and Kim. Self-orthogonal constacyclic codes are studied in Fu and Liu, which is also relevant to point 5. Self-orthogonal codes over a non-unitary ring, thus embracing both point 1 and point 4 is the theme of the article by Shi, Wang and Solé. The paper of Chakraborty and Meziaki is dedicated to a special kind oweight enumerator, the Jacobi polynomial, which is especially relevant to self-dual codes and invariant theory. This is a panorama of point 1. Studies of codes

with a small hull can be distantly rattached to this theme. These include the paper by Sok, and that by Qian et al.

Point 2 is represented in a philosophical sense, by a deep paper of Dysko and Wood on the MacWilliams extension theorem.

Point 4 and 5 are both covered by a nice paper of Shi et al. on polycyclic codes over a mixed alphabet. Similarly the paper by Patel and Prakash on constacyclic codes over a special non-chain ring is relevant to both points. A pure point 5 paper would be a contribution by Borello et al. on quasi-abelian codes, a natural generalization of quasi-cyclic codes.

Point 6 figures in the paper by Tagahashi and Hagiwara.

Point 7 is represented by Shi, Wang, Helleseth, Solé, and also Qin, Zhao, Liu. We could even connect the paper by Duursma et al. which studies codes in the Johnson graph to that track.

Point 8 is covered by Ayebie and Souidi.

As for point 3 it is implicit in almost all papers.

We have included some papers of good quality that do not belong to these 8 themes: the paper on Chudnovsky algorithm by Ballet et al., a paper on permutation codes by Jafari et al., a paper on spherical designs by Martinez, and a paper on character sum bounds by Wu et al.

As we are writing this text, the status of some papers is still uncertain, so we apologize in advance for not including them in this census.

References

- [1] S. Dougherty, G. Matthews, J. Wood, The life and work of Vera Stepen Pless, Notices of the AMS, to appear.
- [2] <https://www.itsoc.org/news-events/recent-news/in-memorial-vera-stepen-pless>
- [3] <https://mathshistory.st-andrews.ac.uk/Biographies/Pless/>
- [4] <https://mathwomen.agnesscott.org/women/pless.htm>