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Academician Štefan Schwarz awarded the 1980 National Prize of the Slovak Socialist Republic

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### ACADEMICIAN ŠTEFAN SCHWARZ AWARDED THE 1980 NATIONAL PRIZE OF THE SLOVAK SOCIALIST REPUBLIC

On August 25, 1980, Academician Štefan Schwarz was awarded the National Prize of the Slovak Socialist Republic for the collection of his works from the theory of semigroups.

Academician Štefan Schwarz was at the birth of the theory of semigroups and has since then contributed in a very considerable way to the development of the theory, as can be seen from the wide international response to his work in the mathematical literature. For the significant results from the theory of semigroups that appeared in his works before 1955 he was awarded the Klement Gottwald State Prize in May 1955. Now, the National Prize of the SSR concerns his works from the theory of semigroups published since 1976, which are listed at the end of this note.

The papers [1], [4] and [5] concern problems of the theory of semigroups in general. The other works are devoted to problems of special semigroups — the semigroups of binary relations, or matrices. In [1] the author showed that it is the ideals and certain special idempotents that play an important role in the problems of structure of the class of  $C$ -semigroups. He studied there the question of existence and structure of maximal ideals of  $C$ -semigroups, presenting the full description of the structure for certain families of  $C$ -semigroups. In [4] and [5] he investigated the relations between right, left and both-sided ideals and between their intersections in an arbitrary semigroup.

In [2], [3], [6] and [7], Schwarz applied his results on semigroups to some semigroups of binary relations or to semigroups of Boolean matrices, which represent binary relations, and in this way deduced a number of results of constructive character for these semigroups. The paper [8] deals with semigroups of matrices that are important in mathematical statistics.

While the results of [1], [4] and [5] continue and improve some formerly known results, the import of the works [2], [3], [6] and [7] is to be seen on the one hand in their close connection to the theory of automata and languages, in which they represent an essential improvement of results of other mathematicians, and, on the other hand, in their form which facilitates their numerical treatment. It was this direction in which the author used his deep knowledge of the theory of numbers, which had been his domain of interest at the start of his scientific career.

We should like to conclude this note by congratulating Academician Štefan Schwarz to this award and wishing him further new significant results in his research in the future.

List of Academician Štefan Schwarz papers,  
for which he was awarded the 1980 National Prize of the SSR

- [1] Š. Schwarz: The ideal structure of  $C$ -semigroups, Czech. Math. J. 27 (102), 1977, 313—338.
- [2] K. H. Kim-Butler, Š. Schwarz: The semigroups of circulant Boolean matrices, Czech. Math. J. 26 (101), 1976, 632—635.

- [3] Š. Schwarz: A counting theorem in the semigroup of circulant Boolean matrices, Czech. Math. J. 27 (102), 1977, 504—510.
- [4] Š. Schwarz: Semigroups containing maximal ideals, Math. Slovaca 28, 1978, 157—168.
- [5] Š. Schwarz: Intersection of maximal ideals in semigroups, Semigroup Forum 12, 1976, 367—372.
- [6] Š. Schwarz: A theorem on binary relations and infinite regular languages, Semigroup Forum 17, 1979, 307—316.
- [7] Š. Schwarz: The Euler-Fermat theorem for the semigroup of circulant Boolean matrices, Czech. Math. J. 30 (105), 1980, 135—141.
- [8] Š. Schwarz: Infinite products of doubly stochastic matrices, Acta Fac. Natur. Univ. Comenian (in print).

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