KOSTADIN TRENČEVSKI

Born on February 27, 1960 in Kavadarci (Macedonia). Primary school and mathematical gymnasium he attended in Skopje. At that time he had participated in many mathematical competitions and has got several prizes in Macedonia and Yugoslavia. In 1977 he got silver medal on the XIX-th International Mathematical Olympiad. He graduated on Theoretical Mathematics in Skopje at Ss. Cyril and Methodius University in 1982, with average mark 9.76, as the best student in his generation. He got his master degree in 1986 at the same faculty with a thesis from the differential geometry. He got his Ph.D. thesis in 1990 from the differential geometry, whose mentor was Acad. M.Prvanović. Since 1982 he was employed as teaching assistant, in 1991 he became a docent, in 1996 he became an associated professor and in 2001 he became a full professor at the Faculty of Natural Sciences and Mathematics. He has spent his whole research career in Macedonia. He was elected as a member of Southslovenian Academy of Nonlinear Sciences on November 3, 2010, and later he became a foreign member of the Serbian Academy of Nonlinear Sciences.

Research Interests: The research fields of interest of Dr Trenčevski are mainly in differential geometry and gravitation, as well as algebra, topology, differential equations, fractional calculus, analysis and cosmology.

Scientific Results: Up to the end of 2020 he published 142 papers in research journals including the papers from conferences, which are mainly international. Most of them are international journals or journals with impact factor. In 60.5% of the scientific papers Trenčevski is principal author. He has published with Acad. Dončo Dimovski a monograph Complex commutative vector valued groups, by the Macedonian Academy of Sciences and Arts, and he is author of one chapter about pulsars, by Nova Science Publishers. He has participated on 54 conferences, most of which are international.

A list of his selected contributions includes the following:

- It is constructed a nonlinear connection in flat Minkowski space, whose consequences are in accordance with the known gravitational experiments (paper 1. below).
- In the last decade he works on the 9-dimensional space-time: 3 standard dimenions, 3 dimensions about space rotations and 3 dimensions for the time. It enables to explain the circular motion of the spinning bodies in case on a horizontal plane and in case of free fall. This theory is also applied in case of motion of the Earth around the Sun, and the semi-annual variation of the Earth’s angular velocity is explain with about 5% accuracy. These results are obtained in the paper 5. below and in that paper the annual variation of the Earth's angular velocity is also obtained, with about 5% accuracy.
- In the theory of ordinary and partial differential equations are obtained some representations of their solutions (if the compatibility conditions for partial equations are satisfied).
- Some basic papers about the imbedding of the submanifolds with arbitrary co-dimension are obtained (paper 4. below).

- It is presented a cosmological hypothesis of non-linear (accelerated) flow of the time, whose consequences are in accordance with the measurements of the orbital periods of the binary pulsars, cosmological redshift and Pioneer Anomaly (paper 3. below).
- In the theory of vector valued semigroups and groups are given several basic examples of these algebraic structures.
- Several results about tensor integrations on manifolds are obtained in his Ph.D. thesis.
- One open mathematical problem from Prof. Rassias is solved.

Response to Research Results: According to Google Scholar the number of citations of Dr. Trenčevski without self-citations are 503, but including the citations from his coauthors. He was invited from Nova Science Publishers to participate with one chapter of the book "Trends in Pulsar Research". In the international associations he is member of Tensor society (Japan) and he had taken part in the Balkan Mathematical Society. He also took part in several program/advisory committees for international conferences and he was an invited speaker there. He was also a member of the editorial board of Balkan Journal of Geometry and Its Applications, Kragujevac Journal of Math., Mathematica Moravica and two domestic mathematical journals. He has reviewed many papers from international journals and journals with impact factor.

Educational activities: Dr. Trenčevski has held more than 10 courses at Faculty of Natural Sciences and Mathematics at graduate studies, master studies and Ph.D. studies. The courses on Master and Doctoral studies are mainly geometrical courses. In the period from 2015 to 2020 he was chair of the doctoral studies. Dr Trenčevski supervised 2 doctoral dissertations and also 2 are in procedure, and he has supervised number of master theses and graduate works. He had been a member of several number of doctoral thesis defense committees.

Dr Trenčevski is author/coauthor of 25 popular articles, 3 books for the university students, 8 books for secondary school students, 8 books/handbooks for primary school students and 6 handbooks for talented students in mathematics.

Organizational: Dr Trenčevski has several activities at the faculty and university. In 1998/1999 he was vice dean for science and education and in 2005-2007 he was dean of the Faculty of Natural Sciences and Mathematics.

Besides his duties at the faculty, many years he took part in organizations of the mathematical competitions in Macedonia and took part as a leader and deputy leader of the Macedonian team of students on International Mathematical Olympiads and Balkan Mathematical Olympiads.

Dr Trenčevski participated as a chair in 3 projects and as a participant in 15 projects, including 2 projects from Romania and one bilateral project between Macedonia and Croatia.

Contribution to Nonlinear Sciences: Most of the papers of Dr Trenčevski belong to the non-linear sciences. For example, he uses non-linear connection for description of the gravitation, uses a non-linear flow of the time, considers nonlinear ordinary and partial differential equations and so on.

A List of 5 Selected Research Publications

1. K.Trenčevski, E.G.Celakoska, V.Balan, "Research of gravitation in flat Minkowski space", *Int. J. Theoretical Phys.*, 50 (1), pp. 1-26, 2011.
2. K.Trenčevski, "Contribution to the non-linear connections", *Tensor N.S.*, 57**,** pp. 226-236, 1996.
3. K.Trenčevski, "Time dependent gravitational potential in the universe and some consequences", *Gen. Rel. & Grav*., 37 (3), pp. 507-519, 2005.
4. K.Trenčevski, "New approach for the submanifolds of the Euclidean space", *Balkan Journal of Geometry and Its Applications*, 2, pp. 117-127, 1997.
5. K.Trenčevski, E.Celakoska, "Induced spin velocity of the Earth and its influence on the seasonal variation of the Earth's angular velocity", *The European Phys. Jour. Plus*, 135 (6), art.num. 450, 2020.