

## **PREFACE**

The Geophysical Department of the University of Miskolc and the Regional Committee in Miskolc of the Hungarian Academy of Sciences (HAS) have organized every two years the Inversion Conference since 1995. Unlike in previous years, the 13th Inversion Conference was organized online on 2–3 November 2020 due to the COVID–19 situation. The goal of the conference is to provide a forum for professional researchers engaged in geophysical inversion, on which they can present results in the given topic. In addition to the lectures of senior researchers, PhD students of the University of Miskolc and other universities had been invited to give presentations on their latest doctoral researches. In 2020, a special actuality was given to the conference. It was dedicated to the 10th anniversary of the death of Professor Dr. Ferenc Steiner DSc (1932–2010), former head of the Geophysical Department, University of Miskolc. On the event, it was allowed researchers to give lectures not only on inversion topics but geostatistical ones in honor to the famous professor.



The words of Paul the Apostle “I have fought the good fight, I have finished the race, I have kept the faith”, fit to Prof. Dr. Ferenc Steiner. He was professor emeritus of the University of Miskolc, head of the Department of Geophysics, as well as an excellent scientist, lecturer and pedagogue, who loved and cultivated literature and especially classical music. His successful professional career is entirely connected to the Department of Geophysics, which was his first and last job. He was tireless at work, infinitely precise in his search for finding the scientific truth. He steadfastly

believed in achieving his goals. However, the access road was not always paved smooth for him. However, he fought his battles throughout his career successfully. In the last days of June 2010, he was still thinking about solving professional problems on his hospital bed with colleagues of the Geophysical Department before his sudden death. He was a real university professor, not only because he immediately passed on the knowledge he had acquired, but because he raised his students. He educated the students by example, with his extensive, unheard of education.

He was born in Sopron in a civic family on 12 July 1932. After graduating from the patinated Lutheran High School in Sopron, he studied physics and mathematics at the University of Szeged. Due to his early talent and commitment to science, Professor Ágoston Budó joined him as a demonstrator at the Institute of Experimental Physics. In 1954, he became an assistant professor at the newly established Geophysical Department in Sopron, with the support of the founder of the department, Professor Károly Kántás and academician. Since then, he has been an active member of the Geophysical Department – which was moved in 1959 to Miskolc – without interruption until his death.

Professor Steiner defended his university doctoral dissertation in 1963 and then in 1966 he received his CSc degree. In 1975, he defended his DSc theses in an intensive professional debate, winning an academic doctorate. Since 1977, he has been a full professor at the Department of Geophysics, and in recognition of his work as a lecturer-researcher, he was awarded the title of Professor Emeritus by the University of Miskolc. For 8 years, from 1991 to 1997, he headed the Department of Geophysics. Related to this period are the launch of two new specializations, i.e., geoinformatics and environmental geophysics.

His interest and professional-scientific activity was diverse. Initially, he researched and achieved results in gravity and magnetic exploration, radiology, and geothermal energy. He was particularly successful in research on gravitational methods. His name is associated with the development of procedures for the separation of local and regional effects, as well as the development of a number of filtering techniques for a better interpretation of gravity maps. Applied science and development were not far from him either. Among other things, he developed radioactive methods for determining the quality of coals, which have reached practical use. Under his leadership, the Geophysical Department developed a radioactive measuring and automatic qualification system, with which it became possible to separate the barren rock from the coal in the mine during transport, whether it was transported on tape or a tram.

In the second period of his research carrier, his interest turned to statistics. The impact and influence of unavoidable errors and uncertainties on geophysical measurements was investigated for the evaluation and interpretation of the measurement results. Based on his qualifications as a mathematician-physicist, he has achieved several important results with his colleagues in the field of robust, resistant geostatistical methods. The most prominent of these is the Most Frequent Value (MFV) method, and which has become an integral part of many developed methods at the Department of Geophysics and in international cooperation.

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Also on this year's Inversion Conference, the scientific research results of Professor Ferenc Steiner appeared in several presentations. For example, robust cluster analysis was established on the use of the MFV method, while a robust inversion approach was applied to evaluate astrogeodetic measurements. Image processing and tomography were improved by the use of the MFV procedure, and the noise sensitivity of the Hilbert transform was reduced by using Professor Steiner's MFV method. The results of Professor Steiner's efforts are everlasting, the conference was permeated by some of his scientific discoveries, and the discussions have shown that the results of the professor's research are the enduring values of the scientific repository of the future.

As in earlier times, this Special Issue devoted to the Inversion Conference is realized in close cooperation with the Editorial Board of *Geoscience & Engineering*. The guest editor hereby expresses his thanks for the fulfilled work of the Editorial Board of the journal, as well as the authors and reviewers of the papers.

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guest editor

