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Professor Karel Svoboda (1918 - 1997)

Karel Svoboda, Doctor of Natural Science, the ordinary professor of mathematics at the Faculty of Science of the Masaryk University in Brno and the founding member of the editorial board of Archivum Mathematicum, died on August 19, 1997.

Karel Svoboda was born on December 9, 1918 in Kunovice (Moravia, Czech Republic). His studies of mathematics and descriptive geometry at the Masaryk University in Brno were interrupted by the nacist's occupation and the closing of Czech universities on November 17, 1939. Karel Svoboda was transported into the concentration camp at Sachsenhausen where he spent more than half a year. During the rest of the nacist's occupation he was employed as a worker. In 1945, after the war, he finished his study and he became a lecturer (1945), an associated professor (1959) and an ordinary professor (1963) at the Masaryk University.

The first research papers by Svoboda were inspired by his teachers, L. Seifert and O. Borůvka. About 1937 L. Seifert studied systematically the polar theory of cubic hypersurface J in fourdimensional projective space from the viewpoint of classical synthetic geometry. In [2] and [5], Svoboda discussed in detail the case J contains a double rational normal curve of fourth dergee. In early thirties O. Borůvka, under the direct influence of É. Cartan and by using the moving frame method, wrote a famous series of papers on twodimensional surfaces in n-dimensional space of constant curvature. Continuing in such a research, Svoboda first solved the existence problem for the surfaces with locally spherical indicatrix of normal curvature in fivedimensional space of constant curvature, [1]. In [3] and [4], interesting metric properties of the Veronese surface are deduced in a similar way. The fundamental paper [7] and its supplement [9] study the surfaces in an arbitrary space of constant curvature with the property that a prescribed number of the indicatrices of normal curvature at each point are circles. Further, in [6] and [8] Svododa deduced necessary and sufficient conditions for a surface in projective space to be realisable in a space of constant curvature of the same dimension with prescribed metric properties.

To a joint research with V. Havel and I. Kolář, [11], Svoboda contributed mainly with his deep knowledge of the moving frame method. The starting point were some results by R. N. Ščerbakov and his coworkers on the application of the Cartan's methods to the investigation of non-holonomic submanifolds. The paper [11] extends these results to systems of submanifolds, the net on surface being the simpliest example.

The most important papers by Svoboda deal with line congruences, i.e. with twoparameter families of straight lines. The deformation theory of line congruences in projective spaces was established by E. Čech in early fifties and further developed by A. Švec. The first research by Svoboda in this field was devoted to stratifiable cycles of line congruences in odd-dimensional projective spaces, [10]. Then he deduced fundamental results on the deformation of line congruences in symplectic spaces, [12], [13], [14], [15]. In [21] he discussed the developable correspondences between line congruences in symplectic spaces from the deformation point of view. With this extended experience in the deformation theory Svoboda came back to the projective case. He completed several results by Čech and Švec in the case of higher dimensional projective spaces, where the higher order osculating spaces came into the game, [18], [19], [20].

Parallel to these activities, Svoboda studied the pseudocongruences in the sense of R. M. Gejdel'man, i.e. n-parameter families of $(n-1)$-dimensional linear subspaces in projective space of dimension greather or equal to $(2n-1)$. In [16] he investigated the point deformations of completely focal pseudocongruences. Then he deduced several relations of the developable correspondences to various kinds of deformations, [17], [22].

In the personality of Professor Karel Svoboda high scientific qualification was closely connected with pedagogical mastership. He educated a great number of Czech geometricians of today. All his pupils remember Professor Karel Svoboda not only as an excellent scientist, and an extraordinary teacher, but also as an outstanding person with very significant impression on their careers.

Josef Janyška, Ivan Kolář

List of scientific papers by Prof. RNDr. Karel Svoboda, CSc.

[1] K. Svoboda: *Sur une classe de surfaces à l'indicatrice de courbure normale localement sphérique dans un espace à cinq dimensions,* Práce brněnské základny Československé akademie věd, Vol. **XXVII** (1955), No. 325, 373–392.

[2] K. Svoboda: *Cubic hypersurface with double curve of fourth degree in fourdimensional space (Czech),* Práce brněnské základny Československé akademie věd, Vol. **XXVII** (1955), No. 326, 393–404.

[3] K. Svoboda: *Sur une caractérisation métrique de la surface de Véronèse,* Spisy přírodovědecké fakulty Masarykovy university v Brně, No. 368 (1955), 1–22.

[4] K. Svoboda: *Remark on surfaces with locally spherical indicatrix of normal curvature in fivedimensional space (Czech),* Časopis pro pěstování matematiky, Vol. **81** (1956), 299–303.

[5] K. Svoboda: *Contribution to the theory of normal curves in fourdimensional space (Czech),* Časopis pro pěstování matematiky, Vol. **82** (1957), 301–307.

[6] K. Svoboda: *Projective properties of minimal surfaces with circles of normal curvature (Czech),* Časopis pro pěstování matematiky, Vol. **83** (1958), 287–316.

[7] K. Svoboda: *Sur une classe de surfaces sphériques dans un espace a courbure constante,* Czechoslovak Math. J., Vol. **8 (83)** 1958, 399–447.

[8] K. Svoboda: *Remark on minimal surfaces with circles of normal curvature of constant radius (Czech),* Časopis pro pěstování matematiky, Vol. **85** (1960), 291–299.

[9] K. Svoboda: *Complément au mémoire: Sur une classe de surfaces sphériques dans un espace a courbure constante,* Czechoslovak Math. J., Vol. **11 (86)** 1961, 428–439.

[10] K. Svoboda: *Cycles de congruences stratifiables dans un espace projectif de dimension impaire,* Annali di Matematica pura ed applicata (IV), Vol. **LVII** (1962), 239–256.

[11] K. Svoboda, V. Havel, I. Kolář: *La méthode du repérage des systèmes de sous – variétés,* Commentationes Mathematicae Universitatis Carolinae, Vol. **5** (1964),183–201.

[12] K. Svoboda: *Déformation symplectique des congruences de droites,* Archivum mathematicum (Brno), Vol. **1** (1965), 59–74.

[13] K. Svoboda: *Déformation ponctuelle des congruences de droites dans des espaces symplectiques à trios dimensions,* Commentationes Mathematicae Universitatis Carolinae, Vol. **6**, (1965),393–401.

[14] K. Svoboda: *Sur la bidéformation symplectique des congruences de droites dans un espace à cinq dimensions,* Analele ştiinţifice ale Universităţii "Al. I. Cuza" din Iaşi, S. I, T. XI_B (1965), 411–428.

[15] K. Svoboda: *Sur une application de la théorie des correspondances développables de E. Čech,* Archivum mathematicum (Brno), Vol. **2** (1966), 33–41.

[16] K. Svoboda: *Sur la déformation projective des pseudocongruences complétement focales I,* Archivum mathematicum (Brno), Vol. **3** (1967), 83–98.

[17] K. Svoboda: *Über die Punktdeformation einer vollständing fokalen Pseudokongruenz,* Mathematische Nachrichten, Vol. **38** (1968), 197–206.

[18] K. Svoboda: *Sur une classe de congruences de droites dans un espace projectif de dimension paire,* Archivum mathematicum (Brno), Vol. **5** (1969), 157–166.

[19] K. Svoboda: *Sur la déformation projective des systèmes osculateurs d'une congruence de droites,* Czechoslovak Math. J., Vol. **20 (95)** 1970, 315–326.

[20] K. Svoboda: *Sur la bidéformation projective des congruences de droites,* Czechoslovak Math. J., Vol. **20 (95)** 1970, 327–336.

[21] K. Svoboda: *Remarque sur la déformation symplectique des congruences de droites,* Scripta Fac. Sci. Nat. UJEP Brunensis, Mathematica 1 (1971), 25–35.

[22] K. Svoboda: *Note sur les pseudocongruences complément focales,* Knižnice odborných a vědeckých spisů VUT Brno, Vol. **B - 56** (1975), 13–16.