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NEWS and NOTICES

THE EIGHTIETH BIRTHDAY OF PROFESSOR JOSEF NOVÁK

ZDENĚK FROLÍK, VÁCLAV KOUTNÍK, Praha

Professor Josef Novák was born on April 19, 1905 in Třebětín in southern Moravia. He studied mathematics and physics at the Faculty of Natural Sciences of Masaryk University in Brno. In 1935 he became assistant professor at this university. He spent the academic year 1935–1936 in Vienna where he studied topology under Professor Menger. In 1945 he was appointed to a professorship of mathematics at the University of Brno. In 1948 he came to Prague where he served as professor of mathematics at Czech Technical University till 1951 and then, for a year, at Charles University ([6]).

It is well known that B. Pospíšil (whose imprisonment by the Nazis resulted in his death in 1944) and J. Novák were the best members of Eduard Čech's famous Topological Seminar that was held at the University of Brno since 1936. In August 1952, E. Čech, in an evaluation of research results of J. Novák, wrote, among other: "His invaluable asset as compared with almost all other our research workers in mathematics is his quite exceptional persistence: for five or ten years Novák had worked on very difficult and at the first sight quite hopelessly looking problems, which he eventually solved in a brilliant way." In the Seminar, Novák among other worked in the theory of convergence of sequences (L -spaces). Since 1954 all his topological papers belong to this field and its applications in measure and probability theory.

In recent years research in the field of convergence and its applications has grown steadily in many countries. This fact should have brought satisfaction to J. Novák since it confirmed that not only his latest results but also the older ones are still fruitful. This is the case with his research of diagonal-type conditions in double sequences, the significance of which for the study of products of spaces and for idempotency of the closure operator Novák has recognized long ago. A number of prominent mathematicians either re-discovered some of older Novák's results (e.g. A. V. Arhangel'skii in his paper The spectrum of frequencies of a topological space and the product operation (Russian), *Trudy Moskov. Mat. Obshch.* 40 (1979), 171–206) or dealt with similar problems just a little later (e.g. E. A. Michael). Novák's problems and approaches have proved to be very stimulative (see, e.g., his paper On some problems concerning the convergence spaces and groups, *General*



Professor Josef Novák

Topology and its Relations to Modern Analysis and Algebra (Proc. Kanpur Topological Conf., 1968), Prague 1971, 219–229). We have not sufficient information about unpublished results of J. Novák. Let us mention only that one construction in the paper P. Erdős and A. Hajnal: On the structure of set-mappings, *Acta Math. Acad. Sci. Hungar.* 9 (1958), 111–131, credited to J. Novák by the authors, has had importance in logic (Jönsson algebras).

Before discussing Novák's results from the last decade, let us note that last year's Conference on Convergence in Bechyně, Czechoslovakia, took place under his guidance. It successfully continued the series of conferences in this field held in GDR, Poland and U.S.A.. It demonstrated Novák's credit for the fact that Czechoslovakia has been a generally recognized partner in the international research on convergence, with a significant contribution in sequential convergence.

During the last decade J. Novák has further developed the theory of sequential convergence spaces. Let us recall that a sequential convergence space is a closure space in which the closure of a set is the set of limits of convergent sequences of elements of the set. If this space is topological, it is called a Fréchet space. The class of Fréchet spaces is not closed under products. This result is usually mentioned in connection with a paper by S. P. Franklin published in 1965. In fact, an essentially simpler example appeared already in Novák's habilitation thesis (*Sur les espaces (\mathcal{L}) and sur les produits cartésiens (\mathcal{L})*. Publications de la faculté des sciences de l'Université Masaryk, No. 273 (1939), 1–28). To find necessary and sufficient conditions for the topological product of two Fréchet spaces to be Fréchet, remains a hard open problem. Necessary and sufficient conditions for the convergence product of two Hausdorff Fréchet spaces to be Fréchet are established in [58]. These conditions are necessary for the topological product of two Fréchet spaces to be Fréchet.

A number of Novák's results consists in difficult and technical constructions of spaces with prescribed properties. A countable Fréchet space which is sequentially regular (i.e. projectively generated by continuous functions) but not regular is constructed in [62]. This result definitively settled the relation between regularity and sequential regularity.

Novák also continued his investigation of convergence groups and their completions. He proved ([61]) that every free group admits a nontrivial convergence such that the group operation is sequentially continuous. This paper initiated the study of convergence in free groups and led to the construction of the free convergence group over a convergence space (its free convergence being finer than that defined by Novák).

In 1971 Novák constructed, for every commutative convergence group, its completion. (By modifying his construction for filter convergence it was later proved that also every commutative filter convergence group can be completed). The completion introduced by Novák has the usual categorical properties but the completion of a Fréchet group need not be Fréchet. In 1979 Novák raised the problem of defining

such a completion of a commutative convergence group that the completion of a Fréchet group be again Fréchet, that is, defining it hopefully in such a way that the completion of the group of rational numbers have yielded the real numbers with the usual topology. A contribution to the solution of this difficult problem is given in [64] where an extension of a convergence group defined by double sequences is introduced.

Although we have concentrated on the theory of convergence spaces, it is worth mentioning that Novák's contribution to general topology has been much broader ([1]). Novák investigated characters, compactifications of topological spaces and ordered sets (in particular, Suslin's problem). He studied the Čech-Stone compactification of natural numbers and used this space to prove, e.g., that the product of two countably compact spaces need not be countably compact.

The Prague Topological Symposia have been of considerable importance for the development of general topology. These Symposia have taken place in Prague every five years since 1961, on the initiative of E. Čech. Professor Novák was chairman of all the five symposia held till now, and it is to a large extent through his efforts that they became one of the most important conferences in this field.

The major part of Professor Novák's life is closely linked with the Czechoslovak Academy of Sciences, to the membership of which he was appointed at its foundation in 1952. Since the establishment of the Institute of Mathematics of the Academy he was head of its Department of Probability Theory and Mathematical Statistics for twenty years. In the years 1972–1976 he was director of the Institute ([3], [4]).

After leaving his office in the Presidium of the Academy he was chairman of the Scientific Board for Mathematics in the years 1966 to 1981. Under his leadership the Board prepared reports on the fundamental problems of application of mathematics, on mathematical education, and on the application of mathematical methods in biology, which were then considered by the Presidium of the Academy. They concerned the three principal problems to which Professor Novák devoted much effort during all his lifetime ([2], [3], [4], [5]).

Professor Novák's activity in the organization of the National Programmes of Basic Research was very extensive as well. In 1970–1981 he was chairman of the National Project I – 4, which included practically all basic research in mathematics in Czechoslovakia, and he is still member of the council of Programme I for mathematics and physics ([3], [4]).

In 1962 he was elected an honorary member of the Union of Czechoslovak Mathematicians and Physicists; in the same year he became member of its Central Committee, and was its chairman in 1972–1978 ([3], [4]). His activities did not cease at the end of his term of office. In spite of certain doubts on part of the mathematical community the Union cooperated, on Professor Novák's initiative, on the four-year TV series "Mathematics mostly in serious vein" and Professor Novák became chairman of the TV committee of the Union. The series successfully helped the general public to become acquainted with and to better understand the modern conceptions

of secondary school mathematics. He is also chairman of the Committee for Czech mathematical terminology, a subject in which he has been deeply interested for many years.

Professor Novák has also made a significant contribution to the international scientific community by serving on several committees. From 1963 to 1976 he was chairman of the Czechoslovak National Committee for Mathematics representing Czechoslovakia in the International Mathematical Union. He attended several International Congresses of Mathematicians and General Assemblies of IMU. From 1966 to 1974 he was a member of the International Commission for Mathematical Instruction of IMU. From 1972 to 1976 he was a member of the United Nations Advisory Committee on the Application of Science and Technology to Development.

In 1971 the Stefan Banach International Mathematical Center was founded in Warsaw as a joint center of Academies of several socialist countries. Professor Novák took part in the preparatory works and till 1982 was a member of the Scientific Council. Let us mention that last year, on the initiative of Professor Novák and Professor Császár, a semester on general, geometric and algebraic topology was held at the Banach Center.

At present, Professor Novák is a scientific advisor of the Institute of Mathematics of the Czechoslovak Academy of Sciences. He is an active member of the Scientific Board for Mathematics of the Academy, of the Czechoslovak National Committee for Mathematics and of several other committees, editorial boards etc.

He was twice awarded the Order of Labour (1965, 1982), the Bolzano Golden Medal of the Academy (1970), the Golden Medals of Palacký University, J. E. Purkyně University and Czech Technical University. His contribution to mathematics was recognized also abroad. He was awarded, among other, the Memorial Medal of the Academy of Sciences of the USSR, the Gauss Medal of the Academy of Sciences of the GDR, the Drinov Medal of the Bulgarian Academy of Sciences.

On the occasion of his eightieth birthday Academician Novák was awarded the Golden Plaque of the Czechoslovak Academy of Sciences "For Merits in Science and for Mankind", Golden Medals of Palacký University and the Faculty of Mathematics and Physics of Comenius University, the Peace Medal of Charles University, and the medals of the Union of Czechoslovak and the Union of Slovak Mathematicians and Physicists.

For the years to come we wish Professor J. Novák good health, personal well-being and further success in scientific work as well as in his activities on behalf of the mathematical community.

SUPPLEMENT TO THE LIST OF PUBLICATIONS OF J. NOVÁK

- [1]—[48] see [1], [2]
- [45]—[57] see [3], [4]
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