



Beijing, 2014

### **In memoriam Gyula Pap (1954 – 2019)**

Gyula Pap passed away on October 4, 2019 in a hospital in Budapest. The cause of his death was pulmonary embolism. His sudden death was unexpected to his family, friends, colleagues and the Hungarian mathematical community as well. He worked throughout his adult life as a teacher and a researcher at the University of Debrecen from 1977 to 2009 and at the University of Szeged from 2009 to 2019.

Gyula Pap was born on May 12, 1954 in Debrecen. His father was a lawyer and his mother was a statistician. He was an only child, and he attended elementary and secondary school in his native town. He graduated in 1972 at the prestigious Mihály Fazekas Secondary School in Debrecen in a specialized maths class. He continued his studies at the University of Debrecen (Lajos Kossuth University at that time), and received his university (MSc) degree in mathematics

in 1977. During his university years, he already got to like probability theory, and he wrote his master thesis entitled ‘On the asymptotic behaviour of the generalized binomial distributions’ under the supervision of Béla Gyires. Then he started to teach at the University of Debrecen as an assistant, and tried to find some research topic.

The first turning point in his research career was in 1981 when he started doctoral studies at the University of Vilnius in Lithuania under the supervision of Vyngantas Paulauskas. He obtained his Candidate of Sciences degree in mathematics in 1985 by writing a thesis entitled ‘Properties of functions of the distribution of the norm of stable vectors in Banach spaces’.

The second important milestone in his career is 1988 when he got a research fellowship of the Alexander von Humboldt Foundation, and started to work on limit theorems for probability measures on topological groups at the University of Tübingen in Germany with Herbert Heyer, a leading expert in the field. Gyula Pap spent altogether two years in Tübingen, one and a half year from November 1988 to April 1990, and then half a year from November 1995 to April 1996. During his first stay in Tübingen, he mainly focused on learning new techniques and not on writing papers. This proved to be a good strategy, since returning back home, later on he could write several papers on (central) limit theorems for probability measures on Lie groups, which resulted in earning the Doctor of Science degree of the Hungarian Academy of Sciences in 1999. In the same year he became a full professor of the University of Debrecen. From September 2002 he spent half a year at the Southern Illinois University, Carbondale in the USA supported by the J. William Fulbright Foreign Scholarship Board, and he carried out research work on probability theory on Lie groups together with Philip Feinsilver.

Around 1993 Gyula Pap started to deal with statistics of stochastic processes, motivated by Mátyás Arató, a professor at the University of Debrecen. This turned out to be the third important milestone of Gyula’s career. At first he mainly considered autoregressive moving average processes, later on branching processes in discrete and continuous time, and even more general processes such as affine processes and stochastic processes given by stochastic differential equations with time delay. He became an internationally respected researcher in this field as well. In the last five years he was thinking about writing a new book on the statistics of branching processes. In 2019 he finally decided to start it, but, due to his sudden death, this book will no longer be written.

Gyula Pap held several positions at the University of Debrecen, among others he was the director of the Institute of Mathematics from 1999 to 2001, and the head of the Department of Applied Mathematics and Probability Theory from 2003 to 2009. In 2004 the Faculty of Informatics was founded at the University of Debrecen, and he was the vice-dean of scientific affairs at this faculty from 2004 to 2009.

In 2009 he moved to the University of Szeged, where he served the Bolyai Institute until his death as a successor of Sándor Csörgő. It was a difficult task, but he managed to succeed by working really hard. He was the head of the Department of Stochastics for eight years, including 3 years as the head of the Bolyai Institute.

Gyula Pap had 140 published, 1 accepted, and 4 submitted papers. He liked working with other researchers, especially with students and young colleagues. He invested enormous time and effort in discussing mathematical questions with them. He had 11 doctoral students who obtained a Ph.D. degree, and one more student is still working on her Ph.D. He was the leader of several international scientific cooperations with Dutch, German, Portuguese, Chinese, French and Croatian researchers, and he always involved students and young colleagues in these projects. He was a regular visitor of the Department of Mathematics of the Radboud University Nijmegen in the Netherlands for more than a decade. His scientific achievement was rewarded by many prestigious prizes and honours, among others the Tibor Szele Medal of the János Bolyai Mathematical Association in 2014, and the Academic Prize of the Hungarian Academy of Sciences in 2015. From 1999 he was a member of the editorial board of *Publicationes Mathematicae Debrecen*, and from 2009 that of *Acta Scientiarum Mathematicarum* (Szeged).

He was able to rave about discovering new mathematical results, to work hard and very intensely, and he was very happy if he found something interesting and new. That motivated mainly his research. Everyone who met him could experience his kindness and genuine interest in the world. He never stopped discussing and questioning the happenings around him and standing up for what he believed in. He easily made new friends, regularly played tennis, went swimming, he was a member of the Bolyai Institute's chorus and he visited wine tasting events as well.

Gyula and I worked and conversed a lot, and not only about mathematics. He was always ready for doing something together, e.g., for a walk in the city or for having lunch together at a new place. Photography was one of his hobbies. He liked taking photos of (parts of old) buildings very much.

Gyula will be deeply missed by those whose lives he touched.



Paris, 2016

*Mátyás Barczy*