

Kálmán Győry

80+ $\epsilon$

Ákos Pintér



UNIVERSITY *of*  
DEBRECEN



- Date of birth: 23 February, 1940
- Place of birth: Ózd

Kálmán's mother was at home, his father was a teacher. Kálmán has 5 sisters and brothers

- married in 1964, his wife a university teacher of psychology
- 2 sons: Péter English teacher, Máté mathematician and economist

- There is a Hungarian mathematical journal for secondary schools (KöMaI) and its competition is famous and prestigious.
- Kálmán (from the secondary school Attila József, Ózd) won this competition twice. He is an excellent problem solver .



1955/56, second place



1956/57, first place



1957/58, first place

The first paper on the power values of binomial coefficients, 1963, in Hungarian, *Matematikai Lapok*. In 1996, based on this approach, Győry proved that there is only one nontrivial power value of binomial coefficients:

$$\binom{50}{3} = 140^2$$

- Kálmán's mentor and supervisor 1962-1976.
- One can find the elegant style of Turán in Kálmán's papers.
- Turán opened the world of diophantine equations for Kálmán (connections, friends, and Erdős)



- 1964-1985, assistant, assistant professor, associate professor
- 1985-2010 professor
- 2010- Professor Emeritus
- 1988-2005 Head of Department of Algebra and Number Theory
- 1993-1998 Dean of the Faculty of Science
- 2001-2002 Rector
- 2002-2003 Prorector

- 1993 corresponding member of the Hungarian Academy of Sciences (HAS)
- 1998 ordinary member of HAS
- 1999-2005 Chair of the Mathematical Section of HAS

- 1972-2006 supervisor of 13 PhD students, including A. Pethő, P.Kiss, B. Brindza, I. Gaál, Á. Pintér, L. Hajdu and A. Bérczes who have been appointed to professor
- 1972- founder and leader of a known and acknowledged Diophantine number theory research group in Debrecen. The group has obtained significant results in almost all important areas of Diophantine number theory.

- Honorary president of the János Bolyai Mathematical Society
- Vice president of the Hungarian Accreditation Committee
- Visiting professorship: 1979, Paris; 1983-84, Leiden; 1991, 1993, Budapest
- Guest researcher: 1985-86, Budapest; 1987, Strasbourg; 1993, Berkeley; 1994, Tokyo; 2004, Hong Kong; 2005, Bombay; 2006, Vienna.

- More than 180 invited lectures in Europe, America, Asia and Australia, including at the 1991 Journées Arithmétiques, the 1997, 2017 Schinzel conferences and the 1999, 2018 Baker conferences
- Member of the editorial board of 10 international mathematical journals, including Acta Arithmetica

- A great part of the results and methods of Kálmán Győry are more or less related to unit equations and decomposable form equations, including discriminant form and index form equations, which are of central importance in Number Theory.
- He made several breakthroughs in Diophantine Number Theory and Algebraic number Theory, among others generalizing two dimensional results to the multidimensional case, and extending effective results over number fields to the finitely generated case.
- His results and methods have numerous consequences and various applications. They led to considerable development in several important directions.

Among the most significant results of Kálmán Győry one can mention the following

- the first effective bounds for the solutions of unit and  $S$ -unit equations over number fields and their extensive applications
- effective solution of discriminant and index form equations in algebraic number fields
- the first effective finiteness theorems for monic polynomials and algebraic integers with given discriminant

- giving a general algorithm for finding all power integral bases in number fields, solving thereby a problem from the 19th century
- Generalization of Baker's effective theorem on Thue equations for decomposable form equations in an arbitrary number of unknowns (with Papp)



- apart from finitely many equivalence classes of equations, sharp upper bound (namely 2) for the number of solutions of unit equations (with Evertse, Stewart and Tijdeman)
- effective finiteness results for binary forms and general decomposable forms of given discriminant (with Evertse)
- proof of the equivalence of decomposable form equations and multivariate unit equations (with Evertse)

- full description of the structure of the set of integral solutions of decomposable form equations
- complete solutions of certain classes of binomial Thue equations and ternary equations with unknown exponents (with Bennett, Mignotte and Pintér)

- general irreducibility theorems for composite polynomials and for neighbouring polynomials
- general results on perfect powers from products of consecutive terms in arithmetic progression (with Hajdu and Pintér)
- effective methods for diophantine equations over finitely generated domains (with Evertse)

- extension of the effective theory of unit equations, Thue and decomposable form equations, superelliptic and discriminant equations over number fields to the case of finitely generated ground rings over  $\mathbb{Z}$  (with Bérczes and Evertse)
- he solved some old problems of Delone, Faddaev, Nagell and (with Stewart and Tijdeman) Erdős and Turán.
- he generalized (with Bennett, Mignotte and Pintér) Wiles's famous result on the Fermat equation for more general ternary equations
- he solved index form equations in quintic and sextic number fields in the most difficult cases (with Gaál resp. with Bilu and Gaál)

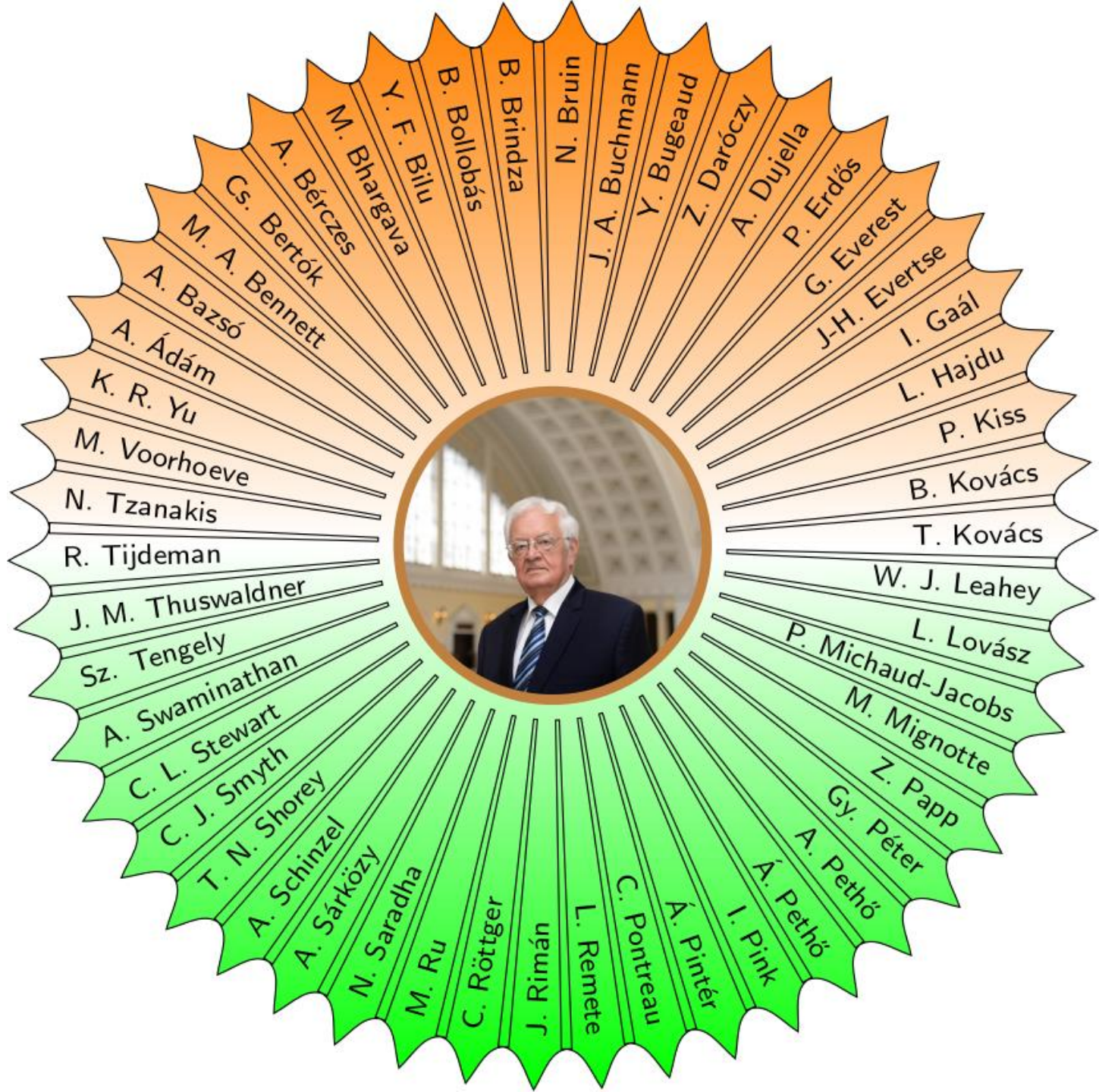
- his book on effective results for decomposable form equations, including index form equations, published in Canada
- his three joint books with Evertse which appeared at the Cambridge University Press, provided the first comprehensive treatment of unit equations, discriminant and index equations and their applications, and effective results and methods for diophantine equations over finitely generated domains. The books contain many (partly joint) results of the authors.

- K. Győry, Résultats effectifs sur la représentation des entiers par des formes décomposable, Kingston, Canada, 1980.
- J.-H. Evertse and K. Győry, Unit equations in Diophantine number theory, Cambridge, 2015.
- J.-H. Evertse and K. Győry, Discriminant equations in Diophantine number theory, Cambridge, 2017.
- J.-H. Evertse and K. Győry, Effective results and methods for Diophantine equations over finitely generated domains, Cambridge, 2022.

- Total number of publications: 195; 4 books, 5 proceedings, 3 dissertations and 183 research papers in prestigious journals (including Acta Mathematica, Inventiones, Crelle's Journal, Compositio, Acta Arithmetica, JNT), 3000 citations
- 50 co-authors (by number of collaborations)
- Jan-Hendrik Evertse (37)
- ÁP (16)
- Lajos Hajdu (14)
- Robert Tijdeman (12)
- Attila Bérczes (11)
- András Sárközy (8)

- Attila Pethő (7)
- Cameron Stewart (6)
- Béla Brindza, Yann Bugeaud, Graham Everest, István Gaál, Zoltán Papp, Andrzej Schinzel (4)
- Mike Bennett, Maurice Mignotte, Tarlok Shorey, Marc Voorheove (3)
- András Bazsó, Nils Bruin, Andrej Dujella, N. Saradha, (2)
- 28 further co-authors with 1 joint work





- 1970, Grünwald Prize, Bolyai Math Society
- 1986, Szele Prize, Bolyai Math Society
- 1992, Academic Prize, Hungarian Academy of Science
- 1998, Honorary citizen, city of Ózd
- 2000, Hatvani Prize, city of Debrecen
- 2000, Order of Merit of the Hungarian Republic
- 2003, Széchenyi Prize, President of Hungary
- 2010, Honorary Medal, University of Debrecen

- 2016, Member of the European Academy, London
- 2016, Member of the Polish Academy of Arts and Sciences
- 2016, Honorary Doctor's Degree, Selye University, Slovakia
- 2017, Honorary citizen of Debrecen
- 2018, Order of Merit of the Hungarian Republic – Commander's Cross

Number Theory Research Group of Debrecen (2021)



Happy Birthday, Kálmán!

Thank you for your kind attention!