

Short Biography of Károly Bezdek

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Károly Bezdek received his *Dr.rer.nat. degree* (1980) as well as his *Habilitation degree* (1997) in mathematics from the Eötvös Loránd University, in Budapest, Hungary and his *Candidate of Mathematical Sciences degree* (1985) as well as his *Doctor of Mathematical Sciences degree* (1994) from the Hungarian Academy of Sciences. He has been a faculty member of the Department of Geometry at Eötvös Loránd University in Budapest since 1978. In particular, he has been the *chair* of that department between 1999-2006. During the period of 1978-2003, while being on a number of special leaves from Eötvös Loránd University, he has held several visiting positions at research institutions in Canada, Germany, the Netherlands, and USA. This included a period of about 7 years at the Department of Mathematics of Cornell University in Ithaca, New York. From 2003 he is the *Canada Research Chair (Tier 1)* of Computational and Discrete Geometry at the Department of Mathematics and Statistics of the University of Calgary and is the *Director* of the Center for Computational and Discrete Geometry at the University of Calgary. He is one of the three founding *editors-in-chief* of the free peer-reviewed electronic journal *Contributions to Discrete Mathematics*.

His research interests are in combinatorial, computational, convex and discrete geometry (including some aspects of geometric analysis, geometric rigidity and optimization). He is the author of more than 100 research papers. The results that he has obtained include:

- a proof of the Boltyanski-Hadwiger Conjecture (1960) for all "fat" spindle convex bodies in Euclidean spaces of dimensions greater than or equal to 15, published in K. Bezdek, Illuminating spindle convex bodies and minimizing the volume of spherical sets of constant width, *Discrete and Computational Geometry* 47/2 (2012), 275-287.
- a proof of tight bounds for the vertex index of spheres in Banach spaces

supporting a quantitative approach to the Boltyanski-Hadwiger Conjecture (1960) (joint work with Alexander Litvak, University of Alberta, Canada), published in K. Bezdek and A. E. Litvak, On the vertex index of convex bodies, *Advances in Mathematics* 215/2 (2007), 626-641;

- a proof of the Kneser-Poulsen Conjecture (1955) for hemispheres in spherical d -space for all $d > 1$ (joint work with Robert Connelly, Cornell University, USA), published in K. Bezdek and R. Connelly, The Kneser-Poulsen conjecture for spherical polytopes, *Discrete and Computational Geometry* 32 (2004), 101-106;

- a proof of the Kneser-Poulsen Conjecture (1955) in Euclidean plane (joint work with Robert Connelly, Cornell University, USA), published in K. Bezdek and R. Connelly, Pushing disks apart - the Kneser-Poulsen conjecture in the plane, *Journal für die reine und angewandte Mathematik* 553 (2002), 221-236;

- a stronger form of Rogers's lemma and its application to the problem of minimizing surface area of Voronoi cells in unit ball packings of Euclidean d -space for all $d \geq 8$, published in K. Bezdek, Improving Rogers' upper bound for the density of unit ball packings via estimating the surface area of Voronoi cells from below in Euclidean d -space for all $d \geq 8$, *Discrete and Computational Geometry* 28 (2002), 75-106 and in K. Bezdek, On a stronger form of Rogers's lemma and the minimum surface area of Voronoi cells in unit ball packings, *Journal für die reine und angewandte Mathematik* 518 (2000), 131-143;

- a discovery of a general principle for uniform stability of sphere packings (joint work with András Bezdek, Auburn University, USA and Robert Connelly, Cornell University, USA), published in A. Bezdek, K. Bezdek and R. Connelly, Finite and uniform stability of sphere packings, *Discrete and Computational Geometry* 20 (1998), 111-130;

- a solution of John Horton Conway's "fried potato problem" (joint work with András Bezdek, Auburn University, USA), published in A. Bezdek and K. Bezdek, A solution of Conway's fried potato problem, *Bulletin of the London Mathematical Society* 27 (1995), 492-496;

- a proof of the Boltyanski-Hadwiger Conjecture (1960) for convex polyhedra with symmetry, published in K. Bezdek, The problem of illumination of the boundary of a convex body by affine subspaces, *Mathematika* 38 (1991), 362-375;

- a proof of László Fejes Tóth's Hyperbolic Disk Packing Conjecture, published in K. Bezdek, Ausfüllung eines Kreises durch kongruente Kreise in

der hyperbolischen Ebene, *Studia Scientiarum Mathematicarum Hungarica* 17 (1982), 353-366.

His book on "Classical Topics in Discrete Geometry", published by Springer in 2010 is intended for a semester long graduate level course, giving a brief introduction to discrete geometry. It is also a research monograph that leads the reader to the frontiers of the most recent research developments in the classical core part of discrete geometry. Last but not least, the forty-some selected research problems offer a good chance to use the book as a short problem book aimed at advanced undergraduate and graduate students as well as researchers.

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