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BA Literature – Umass Amherst, 1996
BA Mathematics – WSC ‘01
MA Literature – WSC ‘01
MA Mathematics – Penn State, 2004
Ph.D. Mathematics – SUNY Albany, 2010

How did I become an Assistant Professor of Mathematics at University of Texas Rio Grande Valley? Professor Maureen Bardwell would say that I “stumbled into math through the back door.”

I enrolled at WSU (known then as WSC) to begin working on a master’s degree in Literature to improve my employment prospects after one year at a very disappointing job as a high school English teacher.

It was at this time that my father suggested that I take a math class because in his mind, I enjoyed math and had always been very good at it. He was half correct; I hated math. Nevertheless, I found a short summer graduate math/education course that I could take and that would count toward my Literature MA. Dr. Fleron led this course, which was aimed at determining how Lego toys can be used as an effective pedagogical tool for teaching math in secondary schools. Somewhere near the end of this brief summer session Dr. Fleron said to me “You’re a mathematician, you just don’t know it yet.” So, with Dr. Fleron’s encouragement and in addition to my graduate literature courses I signed up for two math courses in the fall semester. I hadn’t had any calculus before so I had to start at the beginning – sort of. My first math courses were College Algebra and Number Theory. Around this time I was introduced to integer partitions by an article in Science News Weekly about Ken Ono’s recent (2000) results “Distribution of the partition function modulo *m*.” The bug bit and I was hooked. In four very fast semesters I completed both my Literature MA and a Bachelors’ degree in mathematics. My MA thesis was on Book III of Gulliver’s Travels under the supervision of Professor Stephen Adams.

I was awarded a NSF/VIGRE fellowship to study partitions with the great George Andrews at Penn State. The mathematics I encountered in the Ph.D. program at Penn State was unlike anything I could have expected. For students entering the graduate math program at Penn State, point-set topology, real analysis, some functional analysis, complex analysis (not just complex variables), nearly all of modern Algebra including Galois theory, and a bit of algebraic topology – *were assumed*. I managed to pass the Algebra qualifying exam but Analysis was beyond my reach at the time. (My Penn State first semester analysis textbook was “Big” Rudin - ask your WSU math professor.) Moreover, I managed to get a paper on partitions published in the Proceedings of the American Mathematical Society [4] while at Penn State.

This first paper was what first made me think that I just might be a mathematician. In some ways the results are just like Ken Ono's 2000 paper mentioned earlier although the mathematics is very different.

After three years at Penn State I transferred to the State University of New York at Albany (SUNY Albany) but not without working out a deal with Penn State and SUNY Albany to secure George Andrews as my academic advisor. With credit for my Algebra exam, I eventually passed the remaining SUNY Albany exams. My dissertation consisted largely of two of my published papers. George Andrews was the chair of my committee and he even drove from Pennsylvania to hood me at graduation. (I told you he's great.)

I spent the next three years in three different visiting positions in Maryland, California, and Pennsylvania, and managed to publish a few more papers. At the suggestion of George Andrews I applied and was accepted to a two-year position as a postdoctoral researcher in number theory at the Research Institute for Symbolic Computation (RISC) at Johannes Kepler University in Austria where the wonderful Peter Paule was my research advisor. My office was in a thousand-year-old Bavarian castle! During this time I collaborated with a brilliant postdoctoral researcher also at RISC, Felix Breuer. The European Journal of Combinatorics recently published our paper "Polyhedral geometry, supercranks, and combinatorial witnesses of congruences for partitions into three parts" [1]. The results of this paper initiated a brief email correspondence with Freeman Dyson! The time I spent doing research in Austria has been a boon for my career.

From RISC I went directly into my current position at University of Texas Rio Grande Valley. I am now a Tenure Track Assistant Professor of Mathematics and I teach both undergraduate and graduate courses, advise undergraduate and graduate research. And of course, I continue to publish papers on partitions. As of this writing I am working on several projects detailing properties of the coefficients of Gaussian polynomials. I am very enthusiastic about one new result in particular [6] which I consider to be a companion to the results of my first paper.

To be sure, my entrance into mathematics was unusual. It might even be considered a caution rather than an example. It goes with out saying for anyone who sets out to become an academic mathematician that it is very often a long and difficult journey – made further complicated for me because of my non-standard path. But Professor Hotchkiss, Professor Judge and Professor Fleron have been cheering for me ever since. I am thankful for the continuing support and enthusiasm of the Westfield State University Math Department.

**Selected Publications**

[1] F. Breuer, D. Eichhorn, and B. Kronholm. *Polyhedral geometry, supercranks, and combinatorial witnesses of congruence properties of partitions into three parts*. European Journal of Combinatorics, 65:230-252, June 2017.

[2] F. Breuer and B. Kronholm. *A polyhedral model of partitions with bounded differences and a bijective proof of a theorem of Andrews, Beck, and Robbins.* Research in Number Theory, 2(2):1–15, March 2016.

[3] B. Kronholm. *Generalized congruence properties of the restricted partition function p(n, m).* The Ramanujan Journal, 30(3):425–436, April 2013.

[4] B. Kronholm. *On congruence properties of p(n,m).* Proceedings of the American Mathematical Society, 133(10):2891–2895, April 2005.

[5] B. Kronholm and A. Larsen. *Symmetry and divisibility properties of the generating function for the restricted partitions of n into exactly m parts modulo any prime.* Annals of Combinatorics, 19(4):735–747, December 2015.

[6] B. Kronholm. *On congruence properties of p(n,m,N).* Revised and under second review, 2017.