Biography of Harold Diamond by Larry Vo

https://faculty.math.illinois.edu/~diamond/

Harold Diamond was born in 1940, received his B.A at Cornell University in 1961 and his PhD at Stanford University in 1965. When asked a couple of questions over email, he openly responded to the questions. Here are a list of questions and Diamond's responds to them. Are there any honorable memories from the Ramanujan Centennial Conference? "I remember some of the happenings around meals. The Illini Union was told to make a dinner suitable for vegetarians, since several of the Indian participants were vegetarians. At least one of the dishes was festooned with bacon. Several of the faculty wives, including Mrs. Berndt, Mrs. Rao, and my wife organized a dinner on another evening for a gathering of about 100 people – there was a great deal of preparing to do! Also, the weather forecast was for possible rain, and the dinner was to be held outside at Berndt's, so we were all nervous, but it was dry, and the dinner came off well." Are you currently teaching? If so, can you explain what you are teaching? "I have been retired since 2002." Are you researching anything at the moment? If so, can you explain it? "Most recently I have been working on problems related to Beurling generalized numbers. These are number systems having multiplicative structure but, unlike rational integers, not having additive structure. The questions center on how closely the generators ("g-primes") of

the system imitate the rational primes if the "g-integers" imitate the rational integers and conversely." What is your most memorable math moment? "In graduate school I was seeking to improve the error term in elementary proofs of the prime number theorem (PNT). By studying high order derivatives of the logarithmic derivative of the Riemann zeta function, my advisor, Paul J. Cohen, guessed the form for a generalization of the famous Selberg formula for elementary prime theory. About this time two papers on this topic appeared written by Eduard Wirsing and by Enrico Bombieri, so I put this topic on the shelf. A few years later, I met Bombieri at a conference and we discussed this project further and I saw how to carry out the original project, which led my writing a paper with John Steining on the PNT with an error term of the type of de la Vallee Poussin. Also, in Beurling's paper introducing generalized numbers he gave a quite sharp condition on the distribution of g-integers that insured that the analogue of the PNT held for the g-primes that generated this system of g-integers. In a survey paper we wrote, Paul Bateman and I made a conjecture of a weaker hypothesis that would suffice to establish the PNT, but we had no idea how to prove this. In the late 1990s, Jean-Pierre Kahane set out to show our conjecture was false, but slowly came to the conclusion that it was correct, and he succeeded in proving the PNT using our conjecture with a novel and ingenious method. This work was cited in Kahane's appointment to the French National Academy. Bateman and I were delighted to have contributed to this project."

Diamond's research was on Analytic number theory, distribution of primes, arithmetic functions, and sieve methods. Diamond has 79 publications, 437 citations, was first published in 1965, last published in 2018, has an Erdos number of 1(On sharp elementary prime number estimates), has a Zeilberger number of 3, and has 11 PhD students. [79,437,1965, 2018, 1, 3, 11]

Diamond is still alive and doing well. During the email Diamond attached a photo he took of

Erdos which is shown below