

IRVING KAPLANSKY

The songs and guitar playing of singer-songwriter Lucy Kaplansky have delighted many folk music fans. Some have also had the privilege of hearing her father,

Irving Kaplansky (March 22, 1917 -); accompany her at the

piano, playing a few of the many songs he has written over a

period of more than 60 years. He modestly confesses, “I

sometimes say that God intended me to be the perfect

accompanist – the perfect rehearsal pianist might be a better way of saying it, ... I play loud, I play in

time, but I don't play well.” That may be, but Kaplansky has nothing to be modest about in his choice

for a career – that of a mathematician.



Kaplansky was born in Toronto shortly after his parents emigrated from Poland. As a boy he displayed a talent for music, taking piano lessons for 11 years. His parents thought he would become a concert pianist, but he knew he wasn't that talented. He used his musical skills as a member of a small combo, which played in local nightclubs while he pursued his education. He earned a bachelor's degree from the University of Toronto in 1938 and a master's degree from the same institution in 1940. That year Kaplansky became a citizen of the United States and was the first person to be awarded a Putnam Fellowship to continue his studies at Harvard. In 1941 he received a Ph.D. as the first doctoral student of Saunders MacLane. The title of his thesis was *Maximal Fields with Valuations*.

Kaplansky was appointed a Benjamin Peirce Instructor at Harvard, holding the post until 1944 when he spent a year with the Applied Mathematics Group of the National Defense Council at Columbia University. In 1945 he moved to the University of Chicago where he remained until his retirement in 1984. For Kaplansky, retirement merely meant taking on a new challenge in a new location. Kaplansky

recalls that sometime in the early 1960s he was part of a committee assembled by Washington grants men to answer the question: “What can we do for the mathematical world that would result in a quantum jump in the subject?” Kaplansky suggested: “Fund two great centers.” After 20 years, funds were made available to create the Mathematical Sciences Research Institute (MSRI) located in Berkeley California. Upon his retirement Kaplansky became the second director of MSRI. Now Director Emeritus of the Institute, Kaplansky still spends much of his time at the library preparing papers for publication.

During his distinguished career, Kaplansky supervised 55 PhD students and authored numerous books and research papers. The books include *Fields and Rings* (1952), *An Introduction to Differential Algebra* (1957), *Commutative Rings* (1970) and *Lie Algebras and Locally Compact Groups* (1971). Kaplansky’s interests are broad, including ring theory, group theory, field theory, Galois Theory, ergodic theory, algebras, metric spaces, number theory, statistics and probability. Among the many honors he received were the Guggenheim Fellowship, election to both the National Academy of Sciences and the American Academy of Arts and Sciences, election to the presidency of the American Mathematical Society, and the Steele Prize for cumulative influence from the American Mathematical Society. The Steele citation says, in part “... he has made striking changes in mathematics that have inspired generations of younger mathematicians.”

Kaplansky has written a number of songs, mostly about mathematics and science. Among them is “On an Asteroid with You,” which he wrote on his honeymoon for his wife. It includes the line “You’ll look so cute in your little space suit.” Another is “A Song About Pi” in which he turned the first 14 decimal digits of π into a tune. Each note of the chorus corresponds to a particular decimal digit. Kaplansky’s music and lyrics are unpublished. In 1993 Kaplansky wrote new lyrics for the song “That’s Entertainment” and dedicated the verses to one of his Harvard students, Tom Lehrer, who is well

known for his imaginative mathematical and scientific songs. A passage from the lyrics follows:

The fun when two parallels meet
Or a group with an action discrete
Or the thrill when some decimals repeat,
That's mathematics.
A nova, incredibly bright,
Or the speed of a photon of light,
Andrew Wiles, proving Fermat was right,
That's mathematics.

Kaplansky likes to tell the story of a time when he was junior professor at the University of Chicago teaching a calculus course. Shortly before the final exam, a very attractive, but none too conscientious, young woman appeared at his office door. Kaplansky reviewed for her the topics she had neglected to study during the semester. It seemed hopeless and as she was about to leave she coyly smiled and uttered the fatal words, "Gee, Professor Kaplansky, I'd do ... *anything* ... to get a good grade in the course." Kaplansky returned her smile and responded, "You mean ... *anything*?" She fluttered her eyes and tossed her hair at him and said, "*Anything*, Professor Kaplansky." Kaplansky seemed to consider her offer for a moment and eventually said, "How about ... *work*?"

Quotation of the Day: "A good student is one who will teach you something." – Irving Kaplansky