

The dawn of plasma simulation in Japan and 60 years of memories with

Professor Hasegawa

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Many of the topics at the Hasegawa Symposium were the brainchild of Professor Hasegawa, and my assignment was to introduce his book, "I'm *Ab*, the Scientist - A Memoir of Professor Hasegawa" (ISBN 979-8863943909, Japanese), published by Kindle in 2023. "*Ab*" is short for 'abnormal'. – his high school friends have a weird sense of humor. He is still deciding if he agree. The book not only covers the research covered in this symposium, but also covers his own childhood to his current lifestyle, and is a memoir written in one go, to quote the publisher's introduction. *It describes the life of the professor, who enjoyed his youth as a student during a time when society was still in chaos after Japan's defeat in the war, and has since led the world of plasma science.*

I first met Professor in 1965, shortly after he returned from Bell Labs in United States to Japan and became an associate professor in the Department of Engineering Science at Osaka University. It all started when I took his electromagnetism exercises in my third year of undergraduate studies. The lecture was completely different from any lectures I had taken up until then, and it was like a revelation to me. This lecture inspired me to study under Professor Hasegawa when I entered graduate school. I was able to enter his class, but in the spring of my second year of master's studies, Professor went again Bell Labs in United States. Fortunately, in the fall of my doctoral studies, I was able to devote myself to research as an associated researcher at Bell Labs as a half-time employee without having to worry about living expenses. Since then, Professor Hasegawa has been helping me both in my personal and professional life. Although I was not

directly involved in the research that Professor Hasegawa conducted that will be introduced in this symposium, I remember Professor Hasegawa praising me for "Nonlinear Waves," which I wrote with Professor Toshiya Taniuti while I was at Nagoya University, and which was published by Iwanami and later translated into English.

Now, I would like to briefly touch upon the title of the lecture I chose, "The dawn of plasma computer simulation and 60 years of memories with Professor Hasegawa." While studying abroad at the University of California, Professor Hasegawa obtained his Ph.D. in computer simulation research under Professor Birdsall, but after assuming his post at Osaka University, he established a laboratory for plasma physics using computer simulation (PIC). At the time, the term "computer simulation" was still new, and just that alone made me feel like I was involved in cutting-edge research. In a laboratory seminar, we read Kadomtsev book "Plasma Turbulence" and it was at this time that I learned about the existence of drift waves. I suspect that this seminar was probably the seed of Professor Hasegawa's research on the Hasegawa-Mima equation. Following a recommendation from Professor Hasegawa, I got a job as an assistant to Professor Toshiya Taniuti at Nagoya University, and at that time he often visited Professor Taniuti, and it was from discussions with Professor Taniuti that he came up with the idea for the Nonlinear Schrödinger equation, which led to the invention of optical solitons.