

(英文版)

有馬朗人

科学家、教育家、诗人

Akito Arima Scientist,
Educator, and Poet

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内容提要

本书是纪念有马朗人先生的文集。有马朗人是世界著名科学家和俳句诗人,同时也是在教育改革和科技合作等方面做出了重要贡献的教育家。有马先生学贯东西,集科学家的严谨与诗人的浪漫于一身。他在加强科学教育、国际交流与合作方面付出了巨大的心血,尤其在中日友好与交流方面贡献非凡。本书邀请了四十余位作者撰写与有马先生的交往故事,从不同角度解读有马先生。本书将同时带给读者科学与人文两方面的精神体验。

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Preface

Akito Arima Sensei (有马朗人先生) unexpectedly passed away in Tokyo on December 6th, 2020. We were profoundly saddened by this news. On the next day, having heard this terrible and sudden news from Takaharu Otsuka, one of us (Richard F. Casten) sent an email to a group of colleagues and friends in the international nuclear physics society, lamenting with deep sadness the loss of his friend and mentor. A few days later, Yu-Min Zhao published a memorial article in Chinese with the title *My Mentor Akito Arima Sensei* (《有马朗人老师》) in the Chinese Web of Science, to convey his remembrance and to recall his experiences with Arima Sensei in the past two decades. This article attracted the attention of Da Hsuan Feng, who discussed commemorating Akito Arima Sensei first with Richard F. Casten and later with Yu-Min Zhao. After many communications and discussions, the three of us, Richard F. Casten, Da Hsuan Feng and Yu-Min Zhao agreed to host an online meeting in memory of Akito Arima Sensei, this great person.

In trying to formulate a remembrance of Akito Arima Sensei, who was a man of immeasurable multi-dimensionality, Da Hsuan Feng recalls his personal feeling when he first encountered the famous painting known as *Along the River During the Qingming Festival* (《清明上河图》). This was a vast painting where the painter wanted to reflect the “simple” life of people within a highly complex, and maybe even convoluted, setting in the capital city of Kaifeng during the Song Dynasty almost a millennium ago. The impression one gets at first glance of this enormous piece of art is a sense of “chaos,” and yet upon careful examination, it exhibits a certain order in the behavior of each and every individual in the painting. To Da Hsuan Feng, Arima Sensei possessed such a personality. His life was full of complexities, from which he often drew great simplicities. These endeavors varied from the depth of physics, such as his imaginative insights with Prof. Hisashi Horie of configuration mixing to unravel the issue of nuclear magnetic moments and his collaboration with Prof. Francesco Iachello to courageously introduce bosons to represent nucleon pairs, revealing new nuclear dynamical symmetries, to the profundity of poetry. He experienced and thrived in the supreme intensity of being a

high administrator in one of the most advanced nations in the world. A thread that connects all these disparate “needles” was his Japanese culture. Indeed, understanding Arima Sensei is de facto understanding the meaning of “Order among Chaos” and “Tranquility among Movement”!

This memorial online meeting was held on April 8th, 2021; it was very successful. There were about 400 participants worldwide who joined this session, with twenty one presentations (speakers: Richard F. Casten, Francesco Iachello, Emiko Miyashita, Takaharu Otsuka, Hisashi Horiuchi, Ikuko Hamamoto, Muhsin N. Harakeh, Joseph N. Ginocchio, Piet Van Isacker, Jie Meng, Yu-Min Zhao, Yasuaki Yutani, Koichi Yazaki, Toshio Suzuki, Wei-Ping Liu, Gen-Ming Jin, Bruce R. Barrett, Joseph H. Hamilton, Keh-Fei Liu, Moshe Gai, and Stuart Pittel), either five-minute or two-minute. All presentations focused on each speaker’s experiences with Arima Sensei and/or his influences on their lives. The whole session was moderated by Da Hsuan Feng; Richard F. Casten read the “thank-you” note prepared by Akiko Arima (the daughter of Arima Sensei), to express the gratefulness of the family for the friendship and kindness extended to Arima Sensei and his family from all the participants. Before ending the session, Yoram Alhassid from Yale University and Larry Zamick from Rutgers University were invited to deliver short comments. A few days after this event, George Bertsch from the University of Washington and Larry Zamick were invited to record their oral presentations, which were integrated into the video of the memorial session.

The session was truly heartfelt. It featured a wide variety of remembrances of Arima Sensei’s remarkable life. These spanned the gamut from his many seminal scientific achievements, to his mentoring of generations of students and colleagues, his creative role in scientific administration at the University of Tokyo and RIKEN, his work as a visionary government minister, his wide ranging and extremely effective activities fostering international scientific cooperation, especially within Asia, his lifelong deep love of poetry, with his important role in the world of Haiku, of course, and last but not the least, his deep and unwavering friendships with many of the participants worldwide.

When the three of us (Richard F. Casten, Da Hsuan Feng, and Yu-Min Zhao) looked back at the Arima Sensei remembrance meeting, we felt that the ambiance was more than just his remembrance. It was de facto a summary of the nuclear physics era represented by several generations of nuclear physicists’ remarkable and profound contributions to this field of physics, in which Arima Sensei’s work was right in the center. Also, when we looked back at the process of preparing this session, we realized that there were many more individuals who had wished to present oral presentations related to interactions with and influences from Arima

Sensei. With this as preamble, we believed that it was very proper to compile a book to memorialize Arima Sensei as a profound humanist with great personality on the one hand, and on the other hand as an ordinary person.

This book is a collection of articles underscoring this idea, with subjects of articles answering the question “who was Akito Arima Sensei and what was his impact on me and the world community”. More than thirty colleagues and friends of Arima Sensei, were invited to contribute to this book.

The Editors of this book, Yu-Min Zhao, Richard F. Casten, and Da Hsuan Feng, would also like to take this opportunity to share our own experiences with Arima Sensei in meetings, discussions, and collaborations. This book is also our labor of love and respect for Arima Sensei.

One of us, Yu-Min Zhao enjoyed very much his stay and long collaboration with Arima Sensei. In the first six years, Yu-Min Zhao was a post-doctoral fellow (from January 1998 to October 2004) guided by Arima Sensei; Arima Sensei and Yu-Min Zhao continued the collaboration more than ten years after that. In more than two decades of collaboration, they met each other for discussions more than 500 times (estimated), ate together about 300 times (in rough estimation), and were able to coauthor more than 100 papers in peer reviewed journals.

From March 2000 to late 2004, Arima Sensei suggested that Yu-Min Zhao study the famous puzzle of spin-zero ground state dominance in even-even nuclei in the presence of random two-body interactions. That was a very difficult problem, and certainly, the invincible and strong will of Arima Sensei was the main engine of this collaboration. Here Yu-Min Zhao wishes to mention the miraculous appearance of Arima Sensei one day during this period. That was late afternoon in Summer of 2000, while waiting for Arima Sensei’s discussion in the outer room of his office, Yu-Min Zhao took a quick glance at Arima Sensei, who was standing in the room, and amiably explaining something to one of his secretaries. Arima Sensei looked just like a statue, extremely mild in soft sunlight, with his face incredibly sacred. This was a very fantastic mental experience.

During the period from March 2000 to October 2004, Yu-Min Zhao visited Arima Sensei quite regularly, once or twice, and in



Yu-Min Zhao and Arima Sensei, in Arima Sensei’s office of the Upper House, where Yu-Min Zhao visited about 200 times (taken in 2000)

extreme cases even four times a week, just as a diligent student. Because the schedule in Arima Sensei's calendar was very tight, most discussions were actually carried out over lunches, or in local streets, or in his car during his trips inside Tokyo city, and only about one-third were done in his office. In a small farewell party just before Yu-Min Zhao returned to China in late 2004, Arima Sensei specifically and with profound sincerity said to Yu-Min Zhao, "This paper in Physics Reports is de facto your doctoral thesis that you completed with me".

Unlike some foreign "big names", Arima Sensei had simple and down to earth requests from whomever he encountered. He was never demanding when he visited Shanghai Jiao Tong University. He was satisfied at and enjoyed being treated simply as just a close friend. Arima Sensei had experiences to eat very cheap noodles (without anything else) in small eateries outside the university campuses or service areas of highways, to take shabby taxis in Shanghai and Beijing (taxi cars in Shanghai and other cities of China could be rather dirty and disordered occasionally before 2010), to enjoy very inexpensive cold drinks in the summer on streets, and accept small souvenirs during excursions. Arima Sensei even had interests in visiting local markets of birds and insects where the smell could be rather unpleasant. Indeed, one could emphatically say that hosting Arima Sensei in all aspects was a simple task.

Through close contact, Yu-Min Zhao also witnessed Arima Sensei's two special abilities. The first was that if he wanted to, he could fall asleep quickly. On a few occasions, Yu-Min Zhao would be in the car with him in some extended trips during which Arima Sensei would turn to Yu-Min Zhao and say "let me take a nap." Then, Yu-Min Zhao noticed that Arima Sensei would shut his eyes and soon become asleep. Therefore Yu-Min Zhao believed that this was why Arima Sensei always looked energetic when he met other people, even when he was over eighty years old. The second was that Arima Sensei could change the topic in his mind very quickly. Some people jokingly referred to Arima Sensei as a time-sharing system. Because of the long friendship as well as the fruitful collaboration, Arima Sensei became de facto a close relative (without actually kinship) to Yu-Min Zhao. Often, having such a deep personal feeling, Yu-Min Zhao could not control his tears when he saw Arima Sensei disappearing in the crowds after the two of them bid each other farewell either on streets, or in airports. In 2018, there was a celebration of Arima Sensei's 88-year-old birthday in Tokyo, just before the Celebration Symposium in Shanghai. Yu-Min Zhao was overcome with emotion for an extended period of time, before he went to the platform and delivered his speech.

Throughout this extended and deep collaboration, Yu-Min Zhao received a number of critical lessons. The most important one might be the necessary strength of mental persistence in both research and personal life. Although Arima Sensei

never verbally stressed the importance of mental toughness, he did exemplify it by personal examples in his daily life. Here Yu-Min Zhao also wishes to share the interesting attitude of Arima Sensei while facing anything complicated in research, which is to begin always with the simplest examples. This method is very practical, which might be more useful to younger readers, and is worthy to be pointed out and reminded of, as we have seen many bad and counter examples in collaborations, while facing complicated theoretical problems, or writing computer codes of complicated algorithms.

Richard F. Casten met Arima Sensei at the 1978 Erice meeting held at the Ettore Majorana Centre in Sicily, Italy. This was the first of several meetings on the then new Interacting Boson Approximation Model (IBA or IBM) in that wonderful medieval mountain village (these meetings will also be mentioned by Da Hsuan Feng below) and was during the time when the famous series of Annals of Physics papers on each of the IBM dynamical symmetries were being published. For Richard F. Casten, who, with Jolie Cizewski and colleagues from Brookhaven National Laboratory and the Institute Laue Langevin in Grenoble, France, had just found the first candidate for the newly proposed $O(6)$ symmetry of the IBM in ^{196}Pt , this was a career-changing event. The meeting was filled with iconic names, Francesco Iachello, of course, Herman Feshbach, Igal Talmi, and many others. Hearing the discussions among the participants, and contributing a bit, was a thrilling experience. Talking with Arima Sensei was, of course, enormously enlightening for his physics ideas, his easy way of communicating with them, and remarkable in illuminating the breadth and depth of his cultural knowledge. Richard F. Casten remembered his expositions on the history of Japan, and China, the arts and religions of the east, and even his vast knowledge of European history and culture.

Over the years, Richard F. Casten had many opportunities to meet, discuss, and socialize with Arima Sensei. One of the most interesting was at the nuclear physics conference in Hanoi, in 1994. And another took place in Okinawa in 2010. The last time Richard F. Casten saw Arima Sensei was at the International Symposium on Simplicity, Symmetry, and Beauty of Atomic Nuclei in honor of his 88th birthday in Shanghai in September, 2018.



Richard F. Casten and Arima Sensei, in the Shanghai Symposium (taken in 2018)

At the banquet, Richard F. Casten remarked that there are many great scientists, great administrators of science and universities, great teachers and mentors, excellent government ministers, great promoters of international scientific growth and cooperation, great poets and people with profound historical knowledge, but that to find all these attributes and achievements in one person, and one life, as is the case with Arima Sensei, was truly amazing. A final word on Arima Sensei that helps define his life and work and his influence on other scientists, especially those in early career stages: He lived by, and urged others to do so as well, the mantra to always work hard, study, persevere even when it seemed difficult, to never give up. This advice is mentioned in many of the articles in this volume. It reminds us of the iconic last line from the poem *Ulysses* written by Alfred Tennyson in 1833: “To strive, to seek, to find, and not to yield”. This is a fitting epitome of Arima Sensei’s life. We will all miss him, and his wisdom and compassion greatly for a long time.

One of us (Da Hsuan Feng) met Arima Sensei for the first time when he was a summer intern in the Nuclear Physics Laboratory of Rutgers University in 1966. The head of the Laboratory was the late George Temmer, a well-known nuclear physicist who did pioneering work in Coulomb excitation of nuclei. In the laboratory, there was a visitor named Hiroshi Ogata from Osaka University; Da Hsuan Feng had the honor of being his assistant. One day, Dr. Ogata told Da Hsuan Feng excitingly that a world renowned theoretical nuclear physicist would be visiting the laboratory, whose name was Akito Arima. Dr. Ogata portrayed Arima Sensei as being a giant of science, which made Da Hsuan Feng form a mental image of him as being an enormous person, what Chinese would refer to as “three heads and six arms!” (三头六臂). On the day of his visit, Dr. Temmer requested all the faculty members, post-doctoral fellows, graduate students and even the summer interns to line up outside

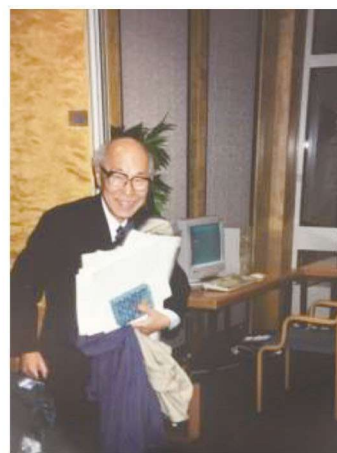


**Da Hsuan Feng and Arima Sensei for a breakfast
in a Tokyo coffee house (taken in 2011)**

the laboratory to welcome Arima Sensei. When Da Hsuan Feng saw him in person, to say that he was disappointed was an understatement. Unlike what Da Hsuan Feng had imagined, Arima Sensei was at most five feet two or three inches tall. Even then, he was already quite bald. In other words, he was not a vast and commanding physique. Yet the disappointment was rapidly turned into pure amazement, when Da Hsuan Feng noticed

that all the faculty members quickly surrounded Arima Sensei, as if they could hardly wait a moment to “suck” knowledge out of him. During the lecture, which of course was way above my mental capacity at that moment, Da Hsuan Feng noticed that all the faculty members and postdoctoral fellows were taking notes as quickly as they could. Immediately after the lecture, the audience, one after another, asked question after question. At the podium, for each question, Arima Sensei listened carefully, and immediately without any hesitation, answered each question rapidly with clarity. Da Hsuan Feng of course was able to understand neither the questions nor the answers, but he could tell when Arima Sensei was answering each question, the questioner was violently nodding his/her head!

To talk about Arima Sensei, certainly in the early phase of the development of the IBM, it is unavoidable not to talk about the nearly annual IBM sessions held in the Ettore Majorana School, which is in the ancient town of Erice, which sits on top of Mount Erice, east of Trapani. Of course, in these sessions, one could always find the presence of the two IBM creators, Arima Sensei and Francesco Iachello. They were there not only to provide discussions with all the participants, but also to provide the usual intellectual nourishments and inspirations. However, not all the moments we enjoyed there were serious. In fact, the afternoons during the meeting were designed specifically to be lecture-free. This allowed the participants to freely roam around this ancient town, establishing rapport, scientific and otherwise, with each other. For dinner, the organizers of the session had made arrangements for us to go to any of the restaurants, where the participants had the opportunity to sample Sicilian cuisine and robust Italian wine. After dinner, all the participants were required to return to the lecture venue to listen to whomever unfortunate soul was scheduled to give a technical talk. In one of the evening talks, Arima Sensei was the “unfortunate” designated speaker. When he walked into the lecture venue, it was obvious to all that he probably had too many glasses of wine. His footsteps were somewhat wobbly, and he spoke with slurry phrases. Yet, the moment he got on the lecture podium, in his dry Japanese demeanor, he delivered a perfect joke in Japanese accented English, interchanging “r” s with “l” s and vice versa. Da Hsuan Feng could not remember what the joke was. All he could remember was that he could not stop himself from laughing out loud. One



A very busy Arima Sensei rushing out of a meeting after his talk, perilously carrying his viewgraphs on the way to his waiting car (taken in early 1990s)

would think that after the joke, Arima Sensei would get cracking with serious physics. That was not to be that evening. He cracked joke after joke, and this practically went on throughout the so-called lecture. All Da Hsuan Feng can recount now is that the entire audience were roaring in laughter throughout the lecture. When it was all over, no one, and certainly not Da Hsuan Feng, could remember what was discussed scientifically by this great scientist. As we have tried to say, Arima Sensei was like a kaleidoscope. He is a world class scientist in one moment, and a world class poet in the next, and a world class administrator in still another. But most of all, he was a decent human being, with all the strengths and frailties of being one. His ability to crack jokes, even when he had a glass too many, was the personification of him as a true human who simply loved to be alive and be joyous with his fellow humans.

Arima Sensei is not only a mentor for his former graduate students, but also a mentor of dozens of nuclear theoreticians worldwide. For example, Dr. Piet Van Isacker (from GANIL, France) mentioned in his article in this book, about his experience of welcoming Arima Sensei to visit GANIL—Arima Sensei said to Piet “I was worried about you”—when Arima Sensei was the president of RIKEN. Another physicist, Dr. Muhsin N. Harakeh (from KVI, Neitherlands) recalled in his article



**Arima Sensei and von Brentano
in Erice (taken in 2003)**

in this book about the very timely help from Arima Sensei for Muhsin’s Ph. D. thesis in the early nineteen seventies. In the article by Joseph N. Ginocchio (from LANL, USA) in this book, Joseph said in the last paragraph that “I miss Akito. He had a great influence on my career. I regret not being able to see him in the twilight of his life”. Readers will encounter many similar statements about Arima Sensei throughout this book.

Arima Sensei was rewarded as “honorary citizen of Tokyo”, in October 2017. He was a popular renowned figure in all of Japanese society for many years, at least as well-known as most Nobel Prize Laureates. According to some Japanese colleagues, this might be due to his open attitude to others, his humorous personality, his great achievements in both Haiku poetry and scientific research, as well as to the many important administrative positions that he held. In our opinion, Arima Sensei deserved to be regarded as an honorary citizen of almost the entire world. A number of Japanese friends told us that Arima Sensei himself did not know

how many positions he held, because so many institutions asked him for various administrative services. For many years Arima Sensei travelled extensively in Asia, America and Europe. The purpose of such visits ranges over nuclear physics, nuclear energy, literature, administrative work related to international exchanges and collaborations, and so on. He was invited to encourage undergraduate students, even high or middle school students, in Japan, China, and USA (e. g. , see the article by Larry Zamick in this book).


To refer to our dear teacher and friend, Akito Arima Sensei, as a Renaissance-man would truly be an understatement. Whatever endeavors he undertook, he always pursued them with the fullest gusto and reaching a supreme level. This was true in physics, in haiku poetry and in administration. In every case, he always was able to attain the highest and most profound level of achievement, not just for himself, but also for humanity.


Through his energetic life, Arima Sensei made over one hundred and fifty visits to China. In his *modus operandi*, with every visit, not only he was able to ascertain a deeper level of understanding of Chinese history, but he also was able to palpably articulate the development of the country. Moreover, he has served for a long time as an enthusiastic promoter for academic exchanges and cooperation among Japan, China and other countries. He received the China Friendship Award, which is the highest honor for foreigners. In recent years, the Chinese “talent program” had experienced some controversy in Japan. In this regard, Arima Sensei, with excellent cultivation in Eastern philosophies, a deep understanding of the long history and recent growth of China, expressed clearly his comments that academic communications are beneficial not only for China but also for all parties involved including Japan and America. He mentioned in an interview that he would be also willing to join the “talent program” if given enough time, as quoted in an article published in *Shukan Shincho* (《周刊新潮》), a popular magazine in Japanese.


Arima Sensei received dozens of honorary professorships or honorary doctor degrees from universities or institutes in Asia, Europe, and America, due to his many contributions to nuclear science and the important roles that he played in international collaborations and exchanges. Once again, we stress that Arima Sensei is an honorary citizen of the world, because his range of vision is not limited to be inside Japan or inside Asia, his vision actually extended all over this world. In the last two decades, he talked many times about nuclear energy and dealing with nuclear wastes. He said many times “Let us work harder, to a better future of human being”. In a lot of summary speeches of meetings, he encouraged younger generations “to be brave! to be ambitious!”

The purpose of this book is not only to memorialize Akito Arima Sensei, as a

great scientist and a humanist, but also to enhance the friendship and understanding between people from different places of the world. Arima Sensei was a person who received his education in Japan but worked and traveled a lot in Europe and America, and frequently visited many other countries (in particular, China), therefore he understood very well both western culture and the culture in Asia. We hope that more and more people, generation after generation, will have a wide vision like Arima Sensei, to make efforts for and to contribute to, the happiness and peace of humanity.

Yu-Min Zhao  (Distinguished Professor, Shanghai Jiao Tong University, P. R. China)

Richard F. Casten  (D. A. Bromley Professor of Physics Emeritus, Yale University, USA)

Da Hsuan Feng  (Former Vice President for Research, the University of Texas at Dallas, USA)

July 31st, 2021

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Great Scholar Akito Arima

Igal Talmi

Akito Arima was a great physicist and a good friend. He made seminal contributions to the theory of nuclear physics, from his paper with Horie on magnetic moments of nuclei up to the interacting boson model which he introduced with Francesco Iachello.

Clearly, Arima realized, like his country Japan, that the West made big progresses in mathematics and natural sciences. He studied these fields and mastered them so well as to be appointed professor in the New York State University in Stony Brook.

Arima appreciated the western culture but not all of its aspects. He was deeply rooted in the Japanese culture and tradition. He realized that it is impossible to live in the US according to that tradition and went back to Japan.

Arima's return to Japan was motivated not only for having his family live according to tradition, he wanted to help in raising the level of science and technology. He joined the University of Tokyo and became known sufficiently to run for its presidency. He told the voters that he intends to raise the level which scared 50 percent of the senior faculty who voted for the other candidate. The tie had to be resolved by tossing a coin. Luck preferred to the better candidate and Arima became president of the University of Tokyo.

When he finished his term, he was appointed the president of RIKEN which became one of the very best nuclear physics laboratories in the world. By that time the reputation of Arima was already very high and he was appointed minister of the government. He was put in charge of two offices; Ministry of Science and Ministry of Education. When the government changed, he was appointed to be the head of the national museum of science and technology in Tokyo.

Arima was not a passive participant of Japanese culture, he contributed actively to it. He published several books of traditional Haiku poems. We remember how in certain places he used to scribble a few lines on a small notebook. These were the materials for a Haiku poem. After an intensive visit to Israel, he published a Haiku book named Massada—a famous historical site which he visited.

Arima was interested also in the culture of the west. He read the Bible, holy bible for Judaism and Christianity, from A to Z. It is a very long book and there are very few people who read all of it. He told me that he used to go from home to the university by train. Such a ride would last more than an hour, and it gave him time to read.

I believe that Arima could understand western people very well. On the other hand, he was not sure that westerners could understand what Japanese really think. In one of my visits I was invited by nuclear theorists from Tsukuba to give a talk. I knew that those physicists are opposed to the physics of Arima but agreed to go there. To my surprise, the audience showed interest and asked reasonable questions. I told Akito my surprise, and he said “They are Japanese”. I tried to explain in more detail, but he stopped me by “but they are Japanese. . .”

In the fall of 2010, there was a small gathering of physicist in Okinawa to mark an interesting event: The upgrading of the Okinawa Institute of Science and Technology (OIST) to become a full fledged research university. Arima was the chairman of the planning committee and he planned it to be as international as possible. If I remember correctly, half of the students and half of the faculty must come from other countries. The first president was a well-known particle physicist from the US (Dr. Jonathan Dorfan, noted from Editors). Clearly, Arima made very important contributions to the promotion of science in Japan.

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