

HISTORY OF SCIENCE

Why India's theoretical physicists owe a lot to Alladi Ramakrishnan's drawing room in Madras

The Institute of Mathematical Sciences was a dream that began to be realised when Nobel Laureate Niels Bohr visited Ekamra Nivas.

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Alladi Ramakrishnan with Nobel Laureate Niels Bohr at Bohr's home in Copenhagen - 1960 | [Alladi Krishnaswami](#)

In the summer of 1958, Alladi Ramakrishnan returned to his elegant bungalow, Ekamra Nivas, in Madras after an unpaid sabbatical in the United States. The young Reader from the University of Madras had spent a year at the [Institute for Advanced Study](#), in Princeton, at the invitation of its director, J Robert Oppenheimer, remembered as the father of the atomic bomb.

The Princeton institute was founded in 1930 to enable research with no immediate view to real-world applications. Albert Einstein was one of the first faculty hires at this haven for top European theoretical physicists and mathematicians fleeing fascism. There, Ramakrishnan first heard the luminaries of modern physics speak. In particular, he was fired up by the seminars, which he described in his

memoir as “the essence of intellectual activity, where there is as much desire to imbibe as there is to impart, where opportunities are provided for a clash of intellects which would produce creative ideas”.



Alladi Ramakrishnan in front of Fulld Hall, Institute for Advanced Study, Princeton, Fall 1957. Photo credit: Alladi Krishnaswami.

Upon his return, he wanted to create the same electrifying experience for his students at the University of Madras, but officials showed little interest. So he started an advanced lecture series titled, The Theoretical Physics Seminar, at his home. This was no journal club – Ramakrishnan invited eminent scientists passing through India to talk to his band of budding theoretical physicists. He had access to this calendar, thanks to his ties with that iconic figure of Indian science, Homi Bhabha, and some eminent European scientists.

An elegant solution

A gifted mathematician and the son of a successful lawyer, Ramakrishnan, a physics graduate and gold medallist in Hindu Law, seemed set to continue with his father’s lucrative legal practice. But after a chance meeting with Bhabha, he began working with the scientist at the Tata Institute of Fundamental Research, which Bhabha had founded in Bombay. They attacked a problem on cosmic radiation together – the student arrived at an elegant solution, but his mentor preferred to pursue his own approach.

So Ramakrishnan went to the University of Manchester to complete his PhD under the statistician MS Bartlett. The elegant solution he had arrived at when working with Bhabha was published in a major journal. While still a graduate student, he attended a conference in Edinburgh in 1949 where he met Nobel laureates like Niels Bohr and Werner Heisenberg, and interacted with other physicists. This resulted in a series of invitations to top European universities. His circle of contacts widened, but he maintained good ties with Bhabha.





Picture taken in 1959 after his return from the Institute for Advanced Study in Princeton. Photo credit: Wikimedia Commons [Licensed under CC-BY-SA-3.0]

In 1952, Ramakrishnan accepted a position at the newly-formed physics department at the University of Madras (where **crystallographer GN Ramachandran** was the head). Theoretical physicist Paul Dirac, who is considered in the scientific community to be in the same league as Einstein, was its first overseas visitor. When he spoke, the Senate Hall overflowed with listeners. It is hard to picture this today, but people stood in the parking lot to listen to this lecture on loudspeakers.

Invitation to Princeton

Ramakrishnan continued to be part of the international research scene. During his stay at the Yukawa Hall (the Center for Theoretical Physics), in post-war Japan, he saw young Asians avidly discuss problems with international physicists. He dreamt of creating a similar space in Madras.

At the High Energy Physics conference at the University of Rochester in 1956, it became evident to Ramakrishnan that the hub of the creative science universe had shifted to the US. One afternoon, when he sat down to lunch at the campus cafeteria, a gentleman asked if he could join him. It was Oppenheimer. They spoke at length. A few months later, Ramakrishnan received an invitation to spend the academic year 1957-'58 in Princeton.





Oppenheimer in 1946 with his trademark cigarette. Photo credit: Wikimedia Commons PD.

Soon after his return, Ramakrishnan was transferred to the temple town of Madurai, a scientific backwater. Because his wife and young son did not move to Madurai, from time to time, the professor visited his family and continued the seminars at Ekamra Nivas. When he was asked to join a national committee for the use of Hindi in physical sciences, he agreed even though he did not know the language. Any trip to Delhi would be via Madras, which translated into another chance to meet his family, another seminar – things which kept his spirits alive.





Professor and Mrs Alladi Ramakrishnan (seated) at a meeting in Madras of the Asian Students at which Education Minister C Subramaniam (speaking) was the chief guest, Oct 1959. Photo credit: Alladi Krishnaswami.

Political persuasion

During one such visit to Madras, Ramakrishnan was invited to a gathering of international students presided over by a state minister, C Subramanian, the Congressman popularly known as CS. Politicians cannot have any real interest in creative sciences, the professor thought, but his wife persuaded him to make a brief appearance. At the function, Ramakrishnan was asked to speak. Impressed by his speech, the minister talked to the physicist, noted his dream to establish a place like the IAS in Madras, and immediately became a champion of the cause.



Nobel Laureate Niels Bohr and Mrs Bohr with Alladi and Lalitha Ramakrishnan at Ekamra Nivas, Jan 1960. Photo credit: Alladi Krishnaswami blog.

Fate too conspired to help the theorist. Only two months after the meeting with CS, in January 1960, the Danish physicist Bohr was in India as the guest of the prime minister. He met Ramakrishnan's students at Ekamra Nivas for dinner and was engrossed in discussions until midnight. At a press conference, along with praise for Bhabha's TIFR, the Nobel laureate expressed his admiration for Ramakrishnan's seminar group. Suddenly, the Prime Minister's Office wanted to know more about them.

With this unexpected validation, Ramakrishnan left on a two-month academic trip to Europe. Upon his return, he was transferred to Madras. He taught at the university, but he was not given an office there. His address was "Professor of Physics, c/o the German class room". As for his dream institute, nothing materialised, despite his trips to Delhi. So he continued to focus on seminars and used his circle of contacts to find good postdoctoral positions for his students.

Meanwhile, CS kept the dream alive. In 1961, he met an American physicist, Maurice Shapiro, who told him that watching the seminar group at Ekamra Nivas reminded him of the way scientists gathered around Oppenheimer in Los Alamos. Maybe the seminar group should meet Nehru?



Professor Abdus Salam, FRS (Imperial College, London), lecturing at Alladi Ramakrishnan's Theoretical Physics Seminar at Ekamra Nivas, Jan 1960. Photo credit: Alladi Krishnaswami.

In his autobiography, *The Hand of Destiny*, CS writes of this meeting which took place in October 1961 at the Raj Bhavan:

“Jawaharlalji was greatly impressed by the enthusiasm shown by the students [of Professor Ramakrishnan]...and in particular to see four girls among the students. When the students told him that they needed an institution for the development of theoretical physics and mathematics, he asked me to examine the proposal and put up a note for his consideration.”

The professor's patience and positivity paid off. The **Institute of Mathematical Sciences** (Matscience) was launched on January 3, 1962. Ramakrishnan was the director for 21 years. Along with TIFR, this homegrown institute continues to be a centre of excellence in theoretical physics and allied disciplines.

The Alladi Diary: From Ekamra Nivas to Matscience, by *Alladi Ramakrishnan*, the memoir which recalls the origin story of this institute will be re-printed by *WORLD SCIENTIFIC (IN PRESS)*.



Institute of Mathematical Sciences. Photo credit: IMSC.

