Childhood

Chandrasekhar, born in Lahore in 1910 during British Raj, belonged to a Tamil Brahmin family. His parents, Sita Balakrishnan and Chandrasekhara Subrahmanya Ayyar, provided an intellectually stimulating environment. He had siblings, including elder sisters Rajalakshmi and Balaparvathi, and younger brothers and sisters. Notably, his maternal uncle was physicist Chandrasekhara Venkata Raman. Chandrasekhar's education began at home, where his father taught him math and physics, while his mother nurtured his curiosity. He attended Hindu High School and later Presidency College in Madras, where he wrote his first paper inspired by Arnold Sommerfeld's lecture. Chandrasekhar earned his bachelor's degree in physics in 1930 and secured a Government of India scholarship to study at the University of Cambridge. There, under R. H. Fowler's guidance, he refined the statistical mechanics of degenerate electron gas in white dwarf stars, building upon Fowler's work with relativistic corrections.

Collage Life

During his first year at Cambridge, Chandrasekhar worked under Fowler, calculating mean opacities and refining the model for limiting mass of degenerate stars. He met E. A. Milne at the Royal Astronomical Society meetings and later studied opacities and stellar photospheres at Max Born's institute in Göttingen. Following Dirac's advice, he concluded his graduate studies in Copenhagen, where he encountered Niels Bohr. Chandrasekhar's pioneering work earned him a bronze medal and a PhD from Cambridge. He secured a prestigious Prize Fellowship at Trinity College, becoming the second Indian to do so. Despite initial skepticism, his encounter with Arthur Eddington, who ridiculed his ideas, motivated him to explore opportunities beyond the UK. Eddington's doubts were eventually debunked by computer advancements, culminating in the identification of a black hole in 1972.

Part 1: Path to American Academia

In 1935, Chandrasekhar's academic journey took a transatlantic turn as Harvard Observatory's director, Harlow Shapley, invited him for a three-month stint in theoretical astrophysics. His visit left a lasting impression, though he declined a subsequent research fellowship. During this time, he crossed paths with Gerard Kuiper, a distinguished Dutch astrophysicist known for his work on white dwarfs.

Part 2: Academic Journey and Residences

After visiting Harvard, Chandrasekhar joined Yerkes Observatory on Kuiper's recommendation. He became an assistant professor in 1936, beginning his long association with the University of Chicago. He quickly rose through the ranks, becoming a full professor at 33. Despite tempting offers, he remained loyal to Chicago, solidifying his position and influence.

Legacy and Residences

Chandrasekhar's legacy grew, gaining the Morton D. Hull Distinguished Service Professorship and US citizenship in 1952 and 1953. His ties to NASA's Laboratory for Astrophysics and Space Research further enhanced his prominence. His residences, like 4800 Lake Shore Drive and 5550 Dorchester Building, testify to his lasting impact on astrophysics.

Philosophy of systematization

Chandrasekhar's scientific drive stemmed from a desire to unify and contribute. He sequentially mastered diverse fields, including stellar structure, dynamics, radiative transfer, quantum theory, and relativity. His journey spanned from the 1920s to the late 1980s, encompassing white dwarfs, black holes, and gravitational waves.

Work with students

Chandrasekhar's impressive student engagement spanned five decades (approximately 1930-1980). He maintained a steady collaborative age of around 30, with students initially calling him "Prof. Chandrasekhar" until earning their PhD, then using the more familiar "Chandra." Despite a 150-mile commute, he taught at the University of Chicago and Yerkes Observatory. Notably, Nobel laureates Tsung-Dao Lee and Chen-Ning Yang, his former students, achieved recognition before him. During lectures, he swiftly addressed trivial queries and provided thoughtful responses to substantial questions, a trait observed by Carl Sagan.

Quotes-

1. “The pursuit of science has often been compared to the scaling of mountains, high and not so high. But who amongst us can hope, even in imagination, to scale the Everest and reach its summit when the sky is blue and the air is still, and in the stillness of the air survey the entire Himalayan range in the dazzling white of the snow stretching to infinity? None of us can hope for a comparable vision of nature and of the universe around us. But there is nothing mean or lowly in standing in the valley below and awaiting the sun to rise over Kinchinjunga.”

2. “In my entire scientific life, extending over forty-five years, the most shattering experience has been the realization that an exact solution of Einstein's equations of general relativity, discovered by the New Zealand mathematician Roy Kerr, provides the absolute exact representation of untold numbers of massive black holes that populate the universe. This "shuddering before the beautiful," this incredible fact that a discovery motivated by a search after the beautiful in mathematics should find its exact replica in Nature, persuades me to say that beauty is that to which the human mind responds at its deepest and most profound level.”

3. “Actually, under stellar conditions matter is generally so highly ionized that, as we shall see in greater detail in chapter vii, the uncertainty in the chemical composition s essentially due to the uncertainty in the abundance of the two lightest elements, namely, hydrogen and helium. The abundance of the lightest elements, has then to be considered as a fresh parameter in the discussion. We can thus summarize by saying that our fundamental problem is to seek a theoretical relation of the kind

Sources-

Background information-

https://www.goodreads.com/author/quotes/72924.Subrahmanijan_Chandrasekhar
https://en.wikipedia.org/wiki/Subrahmanyan_Chandrasekhar

Frame-works-

https://michalsnik.github.io/aos/

Images-

https://en.wikipedia.org/wiki/Subrahmanyan_Chandrasekhar
https://in.pinterest.com/

Other-

https://remini.ai/