

Indian Scientist

Dr. Varun Bhisham Sahni

Shanti Swarup Bhatnagar Prize (2000)



(BORN ON MARCH 29, 1956)

Imagine the universe as a giant, incredibly complex movie. Dr. Varun Bhisham Sahni is one of the **world's leading theoretical physicists** who helps write the subtitles and maps the scenes of that movie. A Distinguished Professor at the Inter-University Centre for Astronomy and Astrophysics (IUCAA) in Pune, Dr. Sahni is celebrated for solving the biggest mysteries about how the universe began, what makes it grow, and how it is organized.

Scientific Contributions

Dr. Sahni's scientific journey reads like a detective story about the universe—one where the clues are hidden in starlight, galaxies, and cosmic patterns. Instead of building rockets or telescopes, he designed powerful "diagnostic tools" that help scientists interpret what they see, much like special lenses that reveal invisible details of the cosmos.

One of his most important contributions is to the study of **dark energy**, the mysterious force that is pushing the universe to expand faster and faster.

To understand this cosmic mystery, Dr. Sahni developed innovative tools such as the Statefinder and Om diagnostics. These tools allow scientists to analyse data from telescopes and distinguish between different theories of dark energy, bringing clarity to one of the biggest puzzles in modern science.

Dr. Sahni also made major advances in understanding the **early universe**. He helped develop the Cosmic No-Hair Theorem, which explains how a brief but explosive phase called inflation smoothed out the universe soon after the Big Bang. This work helps explain why the universe looks so uniform today. In addition, he proposed models that link inflation and dark energy into a single, elegant idea.

Finally, his research helped decode the **Cosmic Web**—the vast network of galaxies and empty spaces that fills the universe. Using mathematical tools called Shapefinders, he revealed how matter organized itself after the Big Bang, turning chaos into the grand structure we observe today.

Honours and Legacy

For his excellence in the physical sciences, Dr. Sahni has received India's highest honours. These include the **Shanti Swarup Bhatnagar Prize (2000)** and the **Homi Bhabha Medal (2014)**. He is an elected fellow of India's leading science academies (IAS, INSA, NASI). Prof. Sahni's legacy lies in providing the scientific community with indispensable tools to explore the deepest mysteries of the universe.