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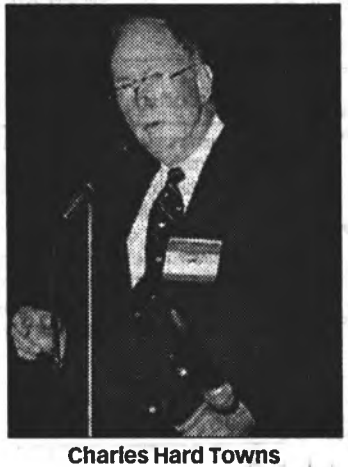
Time to rewrite Einstein's relativity, says Nobel laureate

By R Shankar

Hyderabad, Jan 8: It's time to rewrite the holy grail of physics—the famous Einstein theory on relativity. With new particles emerging from the application of lasers and the heavens cooking up exotic particles, Einstein's postulates on quantum mechanics and relativity would soon need a relook, according to Nobel laureate Charles Hard Townes.

The master of masers (the not-so-famous cousin of lasers), Prof Townes said in a chat here on Tuesday that 80 percent of the universe is composed of dark matter of which we know very little. There is also a dark energy in operation in outer space whose laws may be totally different from the theory that we know of today, including that of Einstein, he said.

It is also possible that the universe has other dimensions that would redefine the concept of time and space. There is lot of new science emerging and we are at a critical phase, he said.



Charles Hard Towns

Prof Townes, who first dabbled in languages and then shifted to natural history before landing in physics, subscribes to the theory of an expanding universe.

Over 14 billion years ago there was a unique point of time when the universe was born out of a big bang. Ever since it has been expanding though there are signs of it slowing down due to dark matter.

In an ever-expanding universe, the laws of physics are different at different points of time, he said. But he was not very sure if the universe will stop expanding and shrink and then collapse.

It was Townes who once proposed that masers (an acronym for microwave amplification under stimulated emission of radiation) could probably be used to communicate with intelligent life forms in other parts of the universe. In a paper in **Nature** years ago, he had proposed that maser oscillator in the near optical region will allow detectable light signals to be beamed between planets of two stars separated by number of light years.

But today it is laser that has raced ahead in application. Lasers can create low temperatures that do not exist anywhere in the universe. At such a temperature, matter starts behaving differently.

It is also possible to pack a lot of energy in a small beam of laser and compress matter at high pressure. "But I am impressed by the way lasers have been used in the medical and industrial fields," he said.

Prof Townes, here to deliver the B.M. Birla Memorial science lecture, said it is theoretically possible to pack all the radio and TV channels and telephone communication into just one beam of laser. Masers, on the other hand, have evolved as a precision tool for atomic clocks and measuring radiation from stellar objects.

Prof Townes has strange passions ranging from farming to insects. "My brother was a good insect collector. During my trips to India, I used to collect some exotic insects for him," he recalled with a chuckle.

"But I love physics because it is a precise science. You could be either correct or wrong. There is no third dimension."