# ECLA researchers probe further into atomic nuclei

By Donna Wong

tion — at the atomic level. help solve the mysteries of creahigh energy machines that may developed a new generation of UCLA researchers recently

waves, otherwise known as plasma among superheated ionized gas sity lasers to accelerate electrons machines use a pair of high-intenwaves, at the fastest rate recorded These "atom-smashing"

device," said head researcher and remain to make it into a working lenges and unsolved problems milestone. However, many chal-"This is a significant physics

UCLA engineering Professor

the field of nuclear energy. erable information that could have an atomic nucleus, gaining considpractical applications, such as in probe further into the structure of faster speeds, researchers can By accelerating particles at

accelerated 100 times the rate of proves that particles can be Beat Wave Accelerators not only tion of particle accelerators called erate electrons, this new generacolliders which separate and accelshorter distance. present accelerators, but in a Compared to modern super

The 10 years of research conducted by Joshi and a team from

UCLA's electrical engineering the journal Nature. reported in the April 1 edition of main engineer Ken Marsh — was experimentalist Chris Clydon and department — including main

could have a large impact on the scientific and medical fields.

implications to medicine, science accelerator could have many and high energy physics," said "Making a small compact

occurring atomic-scale processes

Dawson said.

many implications to medicine, science and high "Making a small compact accelerator could have energy physics."

Professor, Physics John Dawson

researchers said these findings more economical, UCLA accelerators may be smaller and Especially because these

> professor. John Dawson, a UCLA physics

One possible outcome of Joshi's research could be the creation of

Stroboscopic X-rays that flash lik a strobe light and use the particle' high speed to record rapidl

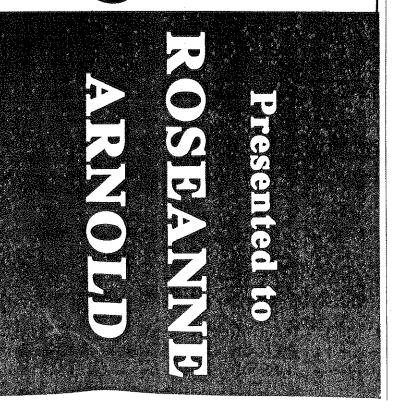
plasma particles with high intensi the possibility of acceleratin originated when Dawson realize behind Beat Wave Accelerator ty lasers. Conceived in the 1970s, the ide

cal, a factor which may make thei can be smaller and more economic generation of particle accelerator theory, and showed that a nev widely available for future use i medicine and research Joshi's research executed th

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## The Seventeenth

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### NURSING

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own decisions, it allowed for conflicting advice, Beasley said.

"The grad council said that graduate nursing should have priority over undergraduate nursing, but the (Committee on Undergraduate Courses and Curricula) said that undergraduate nursing should not be cut," Beasley said. "What do you do with that kind of advice?"

### **ATOMS**

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Particle accelerators that can attain higher speeds will allow researchers to explore deeper into the nucleus — a function that will help researchers to better use and understand nuclear energy.

"Once we saw how the nucleus was built, we were able to get energy out of it," said UCLA physics Professor Claudio Pellegrini.

Joshi's findings are welcome news for many physicists after the congressional cancellation of the \$11 billion super collider project in Texas.

"His experiments proved that you can accelerate a particle to a very high energy in a very short distance," Pellegrini said.

Present-day super colliders in the world of particle physics cost billions of dollars and sprawl for miles. Now, the machines may be sized at only a few hundred meters instead of kilometers, and this allows them to be built more economically, Dawson said.

Currently, UCLA researchers are continuing tests with the new UCLA particle accelerator, and hope to accelerate particles with even more energy than demonstrated by Joshi's experiment.

"(Particle acceleration) is 100 times more rapid now, with the potential of maybe going 100 times faster than that," Joshi said.

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