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Project worker Michael Keane, a UCSC graduate student, inspects the inside of the spectrophograph.

## 21st Century technology to look back in time

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An instrument that will help astronomers "look back in time" and analyze star formations has been completed at the University of California, Santa Cruz.

The \$3.6 million instrument, called a high-resolution spectrophograph, took five years to build and will measure the motions and compositions of faint objects in the universe.

It's "the mother of all spectrographs," said Steven Vogt, professor of astronomy and physics, at a press conference yesterday.

The spectrophograph will be shipped to Hawaii, where it will be a component at the W.M. Keck Observatory, which re-

cently completed the largest telescope in the world.

It has 20 gratings, lenses and mirrors and weighs between 6 and 10 tons. The gratings, which act like giant prisms, are the largest in the world.

The spectrophograph does not take pictures, but disperses light rays into thousands of fine lines spread over the colors of the spectrum — in more detail, and for fainter objects, than any other spectrophograph.

Vogt said the spectrophograph and telescope will allow astronomers to look back in time by observing first-generation star formations. "This is where theory meets observation," said Vogt, who headed the 30-

member team that worked on the spectrophograph for five years.

The Keck Telescope is funded largely by a \$70 million grant from the Keck Foundation. It's a joint venture of California Institute of Technology and the UC system. About \$3 million of university funds were spent on the project, which included building other telescope components at Cal Tech, UC Berkeley and UC San Diego.

Cal Tech and UC scientists will divide 90 percent of the observing time on the Keck Telescope. The remainder will be given to the University of Hawaii for donating its land atop 14,000 Mauna Kea for the telescope site.

A second grant from the Keck Foundation will finance a second telescope, scheduled for completion in 1996. A UCSC team will build another spectrophograph, different from the one just completed, for that project.

The spectrophograph is the second major project for the Keck Telescope built at UCSC. The first was a 57-inch secondary mirror, finished in 1991.

Vogt said the skill of the people who worked on the project "is one of the best-kept secrets in the redwoods. People usually don't associate UCSC with technological advancement." The staff, he said "is on the same level as the best technical experts in the world."