Columbia Faculty and Students Look Deeper Into Space and Time

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the UDF that varied in brightness over the several months during which the photos were taken—ranging from black holes swallowing matter in the center of galaxies, to stars exploding as supernovae, to objects closer to home, such as dwarf stars in the Milky Way. The first step in analyzing the image, Crotts said, was to enhance its quality by taking out "extraneous information," such as cosmic rays. "We have to account for the fact that the detectors [on Hubble] aren't perfect, and we need to make the data more perfect." The Ultra Deep Field images were created from observations from Hubble's two premier cameras, the Advanced Camera for Surveys and the Near Infrared Camera and Multi-Object Spectrometer.

The final analysis of the new images is not yet complete, but Crotts said he was a bit surprised that his team had not yet come across more supernovae. He remains optimistic, though he noted during one of the sessions before the public that "there's something weird going on."

"I think that when we analyze all the data, then we’ll probably come across some fainter supernovae," he said. "Paradoxically," he added, "if we find nothing, it still means something [in terms of scientific significance]."

However, Crotts noted that his team did find a "funny, variable object" in the spiral arm of a galaxy that has changed brightness over time, which possibly could be a star undergoing "violent oscillations" before it explodes.

The team from the American Museum of Natural History, led by Michael Shara, has been attempting to find objects that were moving when the UDF image was taken, in hopes of identifying icy bodies that orbit Earth, beyond Neptune, in a circular band called the Kuiper Belt. That team’s goal is to learn more about the formation of stellar systems and about rapidly moving stars hundreds of light years from the Sun. "We’re drilling through the universe back in time," said Shara, cura- tor-in-charge of astrophysics at the museum.

Led by Kenneth Lanzetta, the Stony Brook team has focused on the faintest of objects in the UDF, mainly very distant galaxies. "The Ultra Deep Field is the most sensitive observation of the universe ever recorded," said Lanzetta, a professor in Stony Brook’s Department of Physics and Astronomy. Because the deeper into space one looks, the closer one comes to the origin of the universe, Lanzetta offered that "the image is like a time machine of almost all of cosmic history."

The controversial future of the Hubble Space Telescope came into play during the event at the museum. As a direct result of the collaboration among the three institutions to uncover new information in the UDF—"We got some communications from people in astronomy about how efforts like this to reach the public might aid the urgent need to extend the life of Hubble," Crotts said, "Hubble is a special resource," he added. "It’ll be a long time before we have anything to take its place." For more information, visit www.hubble-site.org.

Shanghai Express: New Columbia Program Weds Language Study and Business Internships

By Caroline Ladhani

In response to China’s increasing role in global commerce, Columbia has initiated a summer Chinese business internship program in Shanghai. The inaugural program is a collaboration of Columbia’s School of Continuing Education and Department of East Asian Languages and Cultures (EALAC) and Beijing Language University’s Shanghai campus.

For 10 weeks students in the Summer Business Chinese and Internship Program will gain hands-on experience in the business culture and customs that drive the economic development of China. Intensive Chinese language classroom instruction is augmented by private tutorials and daily practice with local language partners. Students attend weekly lectures on China’s role as a leader in the global economy. During the final four weeks of the program, they are assigned internships in the Shanghai offices of multinational companies, giving students an invaluable opportunity to apply their studies in the corporate world.

The program, which is already full, has drawn students from Columbia, Harvard, the University of Pennsylvania and other universities.

“Anyone who wants to study business Chinese should go to Shanghai,” said Lening Liu, director of Columbia’s Chinese Language Program.

Liu designed and helped establish the program with EALAC professors David Wang and Wei Shang. “Shanghai is the economic and financial center of China and the home of hundreds of international companies,” said Liu.

Since China opened its markets to outside competitors, joining the World Trade Organization in 2001, Shanghai has become a hub for foreign investors. In fact, the Financial Times recently dubbed Shanghai “China’s showcase foreign investment capital.” Potential host corporations include Rui An (a Hong Kong company), New York Life, The 9th City (an online interactive game company) and General Motors.

“Columbia’s School of Continuing Education is pleased to cosponsor this international internship in one of the most promising, global financial arenas,” said Frank Wolf, dean of the School of Continuing Education. “We believe it will succeed not only as a rich experience for students seeking to advance in Chinese-related business careers but also will serve as a conduit for global understanding and cooperation.”

The new program is designed for undergraduate or graduate students who have studied Chinese for two or more years at the college level and have a strong desire to use Chinese in a business setting.

For more information, visit www.cc.columbia.edu/shanghai-program.html.