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Laser Ranging to the Moon: How Evolving Technology Enables New Science

JAMES FALLER, JILA-University of Colorado

Technological advances have long been the enabler of scientific progress. The invention of the laser is a prime example of this symbiotic relationship between technical progress and scientific advances. The laser, which today is omnipresent in each of our lives, made its first appearance during the time that I was a graduate student in Professor Dicke's group at Princeton. A major change occurring during that time period was that technology was transforming the study of gravitational physics from just a theoretical subject into also an experimental subject where one could hope to measure things using by-then-available laboratory technologies and techniques. During this same time, the idea for the lunar laser ranging experiment was born. The history and accomplishments of this experiment—a still ongoing experiment which is one of the real scientific triumphs of NASA's Apollo program—will be given.