COMMITTEE ON
SCIENCE, SPACE, & TECHNOLOGY
Lamar Smith, Chairman

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Statement of Chairman Lamar Smith (R-Texas)
Unlocking the Secrets of the Universe: Gravitational Waves

Chairman Smith: Last September, American scientists in Louisiana and Washington State detected a signal from an event so powerful that it sent a detectable ripple 1.3 billion light years ago through time and space to Earth. Albert Einstein was right – gravitational waves do exist.

A century ago, Einstein developed his Theory of General Relativity. He then predicted that intense energy events, like the collision of black holes, could cause such disruption to the universe that they would emit waves that distort time and space much like the ripples on a pond caused by a thrown rock.

After decades of effort, scientists have now observed Einstein's theory in practice. They witnessed the effect of two black holes colliding, which released fifty times the energy of all the stars in the universe put together that emitted a gravitational wave across the Universe that was, for the first time, detected on Earth.

The discovery was the work of hundreds of scientists, decades of ingenuity and innovation, and the commitment of the United States through the National Science Foundation (NSF).

Forty years ago, a group of scientists began to design an experimental system to detect gravitational waves on Earth. Then they submitted a proposal for funding to the National Science Foundation. In 1990, the National Science Board approved funding for the project.

Since that time, NSF has supported development of the Laser Interferometer Gravitational-Wave Observatory (LIGO). This included construction and upgrades, operations, and research awards to scientists who study LIGO data.

Today we will learn more about the value to America of that investment. We will also hear about the monumental success that has resulted from advances in physics, astronomy, engineering and computer science.

The NSF's support for the LIGO project is a great example of what we can achieve when we pursue breakthrough science that is in the national interest.

We have the privilege today of hearing from a panel of witnesses who helped make the discovery. They are leaders of the 1,000 scientists and 80 scientific institutions that make up the global LIGO Scientific Collaboration.

We look forward to learning more about the discovery, what it means for American science and innovation, and what new research and applications may be generated by this breakthrough.

With this discovery, we embark on a new and exciting time for American physics and astronomy. And we move closer to a better understanding of the universe.

This is a quote by Dr. Kip Thorne, a renowned American physicist and one of the founders of LIGO:

> "With this discovery, we humans are embarking on a marvelous new quest: the quest to explore the warped side of the universe – objects and phenomena that are made from warped space-time. Colliding black holes and gravitational waves are our first beautiful examples."

Congratulations to the scientists on their great discovery.

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