



## Sciama Lecture: The Quest for Gravitational Waves



**This year's Guest Speaker: Alessandra Buonanno**

**16 November 2016, 5:00pm**

**SISSA, Aula Magna**

**Via Bonomea 265, Trieste**

The Sciama Memorial Lecture is an event which takes place each year at the International School for Advanced Studies (SISSA) in Trieste, commemorating the great theoretical astrophysicist, Dennis Sciama. This year's talk: "Sounds of Silence: Listening to the Universe with Gravitational Waves," will be given by Professor Alessandra Buonanno, director of the *Astrophysical and Cosmological Relativity* division of the Max Planck Institute for Gravitational Physics at the Albert Einstein Institute in Potsdam, Germany, and one of the key players in the "quest for gravitational



waves," which culminated recently in the first direct observation of this elusive astronomical phenomenon. This lecture is open to the public, free of charge, and will be given in English.

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2016 has been an exciting year for theoretical physicists and astrophysicists: in February, decades of tireless efforts were finally rewarded with the official announcement of the first direct observation of gravitational waves, confirming the existence of black holes and, above all, confirming the fundamentals of General Relativity formulated by Albert Einstein a century ago. At the heart of the discovery is LIGO (the Laser Interferometer Gravitational-Wave Observatory) run by Caltech and MIT with the fundamental collaboration of important European centres including the Max Planck Institute for Gravitational Physics (the Albert Einstein Institute) where Alessandra Buonanno is a director. Dr. Buonanno will present this year's Sciamia Memorial Lecture, the annual lecture hosted by SISSA to commemorate Dennis Sciamia, the great astrophysicist, who died in 1999. Sciamia played a crucial role in developing modern cosmology and relativistic astrophysics and led important groups in Cambridge and Oxford before becoming head of astrophysics at SISSA, where he served from 1982 until 1998. Sciamia's students include eminent contemporary physicists: Stephen Hawking, George Ellis and Martin Rees, to name but a few.

Dr. Buonanno, an Italian scientist of international distinction, as underscored by her position at one of the foremost European physics centres, will talk about the "quest for gravitational waves" from first-hand experience, having been one of its key players.

"The discovery of the year, in addition to confirming Einstein's theory, permits a new kind of observation of the cosmos, quite different from electromagnetic and particle observations," she explains. "In my lecture, I will discuss how these new astronomical messengers, gravitational waves, can unveil the properties of the most extreme astrophysical objects in the universe."

### **Alessandra Buonanno**

Buonanno is one of the leading Italian scientists in the international scene. Her field of study is the physics of gravitational waves and cosmology. After receiving her undergraduate and doctoral degrees from the University of Pisa, she travelled the world, working at major research institutions including CERN in Geneva, and Caltech in Pasadena (USA), before settling in France (IAP, PCA in Paris). She returned to the United States for a period at the University of Maryland, before accepting a prestigious appointment as one of the directors at the Albert Einstein Institute for Gravitational Physics in Potsdam, Germany, in 2014, where she is head of the *Astrophysical and Cosmological Relativity* division. Buonanno is a member of the American Physical Society and the International Society on General Relativity.

**IMAGE:**



- Credits: Alessandra Buonanno

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