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### **Multi-Messenger Astronomy and Astrophysics with Gravitational-Wave Transients**

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The successful construction and operation of the LIGO, GEO600 and Virgo detectors has not yet been rewarded with the detection of a gravitational-wave signal. Nevertheless, searches for gravitational-wave inspirals and more general burst signals are already providing meaningful constraints on the population and characteristics of sources, and in particular on the astrophysics of events which are observed by other means, such as gamma-ray bursts and soft gamma repeater flares. I will present and interpret the results from searches that have been completed, and then describe the ways in which this effort is currently being extended to include more types of astrophysical events observed with different “messengers” and more modes of utilizing the gravitational-wave data. Besides the direct outcomes from these searches in the near term, we are building the capability to extract significant astronomical information from the signals which will be detected by Advanced LIGO and Advanced Virgo in the coming decade.

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