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Type: **Invited talk**

How do black hole binaries form ? Studying stellar evolution with gravitational wave observations

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The recent detection of gravitational waves by Advanced LIGO demonstrates the existence of binary black holes that merge within the age of the Universe. Moreover, the first LIGO event originated from the merger of black holes more massive than previously observed in X-ray binaries in our Galaxy. Future observations with LIGO and VIRGO will probe the mass and spin distributions of black holes in various galactic environments. Since stellar-mass black holes form at the end of the nuclear lifetimes of massive stars, these measurements will help constrain stellar evolution models. In this talk I will review several black hole formation scenarios that were proposed to explain LIGO observations and describe a framework that can be used to calculate the mass distribution of merging black hole binaries in the context of galaxy evolution models.

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Classification de Session: Binary Black Hole Science