

UM Physics Department

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Title: Black hole assembly lines in AGN disks

Abstract:

Since their first discovery in 2015, gravitational-wave observations yielded several "surprises." The LIGO and Virgo observatories detected more and heavier black holes than anticipated; the first object in the lower mass gap was found; and a few weeks ago, LIGO announced the discovery of a particularly heavy black hole within the binary GW190521 that is difficult to explain with our current models of stellar core collapse. The surprises point to the possibility that some of LIGO/Virgo's black hole mergers occurred in the dense accretion disks of active galactic nuclei (AGNs). AGNs act like a black hole assembly line, resulting in multiple consecutive mergers that create heavier and faster spinning black holes. I will discuss what we currently know about AGN-assisted mergers and which of LIGO/Virgo's events are suspects. Another unique possibility in AGNs is accretion onto the black holes that can produce an electromagnetic counterpart to the mergers. I will briefly introduce this possibility.