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Intermediate mass black hole search in LIGO-Virgo's third observing period

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Intermediate-mass black holes (IMBHs) span the approximate mass range $100\text{--}10^5 M_{\odot}$, between black holes (BHs) formed by stellar collapse and the supermassive BHs at the centers of galaxies. Mergers of massive BHs in a binary system are the most energetic gravitational-wave sources accessible by the ground-based gravitational-wave detector network, so is IMBH binary. The third observing run of the LIGO and Virgo detectors witnessed the first confirmed detection of an IMBH - GW190521, a system consistent with a binary merger with the total mass of $\sim 150 M_{\odot}$. Here we report results from a gravitational wave search for IMBHs covering LIGO-Virgo's third observing period.

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