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The Binary Black Hole Merger Rate from Ultraluminous X-ray Source Progenitors JUSTIN FINKE, US Naval Research Laboratory, SOEBUR RAZZAQUE, University of Johannesburg — Ultraluminous X-ray sources (ULXs) exceed the Eddington luminosity for an approximately 10 solar mass black hole. The recent detection of a black hole merger event GW 150914 by the gravitational wave detector ALIGO indicates that black holes with mass greater than 10 do indeed exist. Motivated by this, we explore a scenario where ULXs consist of black holes formed by the collapse of high-mass, low-metallicity stars, and that these ULXs become binary black holes (BBHs) that eventually merge. We use empirical relations between the number of ULXs and the star formation rate and host galaxy metallicity to estimate the ULX formation rate and the BBH merger rate at all redshifts. This assumes the ULX rate is directly proportional to the star formation rate for a given metallicity, and that the black hole accretion rate is distributed as a log-normal distribution. We include an enhancement in the ULX formation rate at earlier epochs due to lower mean metallicities. Our model is able to reproduce both the rate and mass distribution of BBH mergers in the nearby universe inferred from the detection of GW 150914, LVT 151012, and GW 151226 by LIGO if the median accretion rate of ULXs is a factor 1 to 30 greater than the Eddington rate. Our predictions of the BBH merger rate, mass distribution

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