Erratum: Constraining black-hole binary spin precession and nutation with sequential prior conditioning [Phys. Rev. D 106, 024019 (2022)]

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In this paper on measuring binary black-hole spin precession from LIGO-Virgo data, the prior on the parameter $\Delta\Phi$ was incorrectly sampled, leading to a change in the numerical results. The qualitative conclusions from the original article are not affected, but here, we revise Figs. 1–8 and Table I with the correct samples.

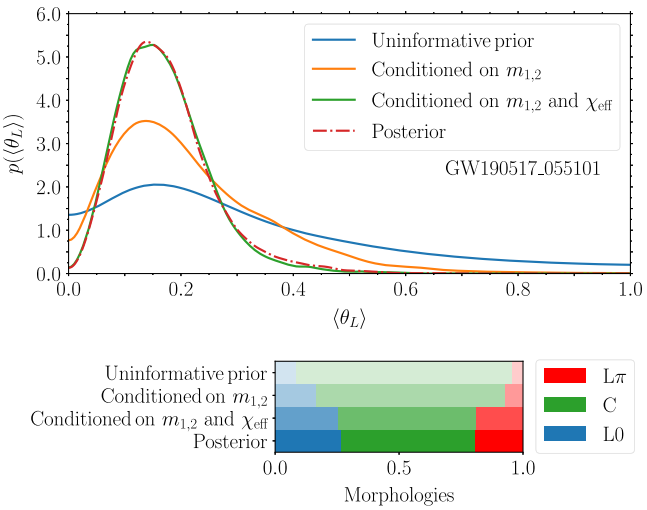

FIG. 1. Revised version of Fig. 1.

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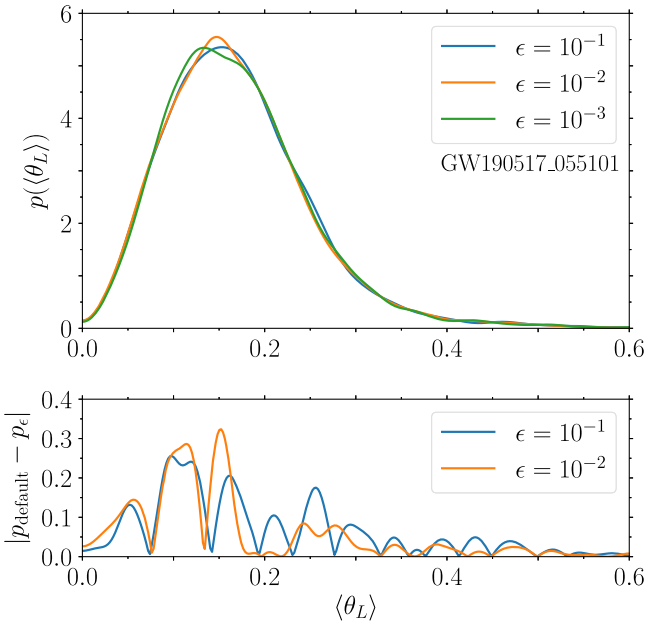

FIG. 2. Revised version of Fig. 2.

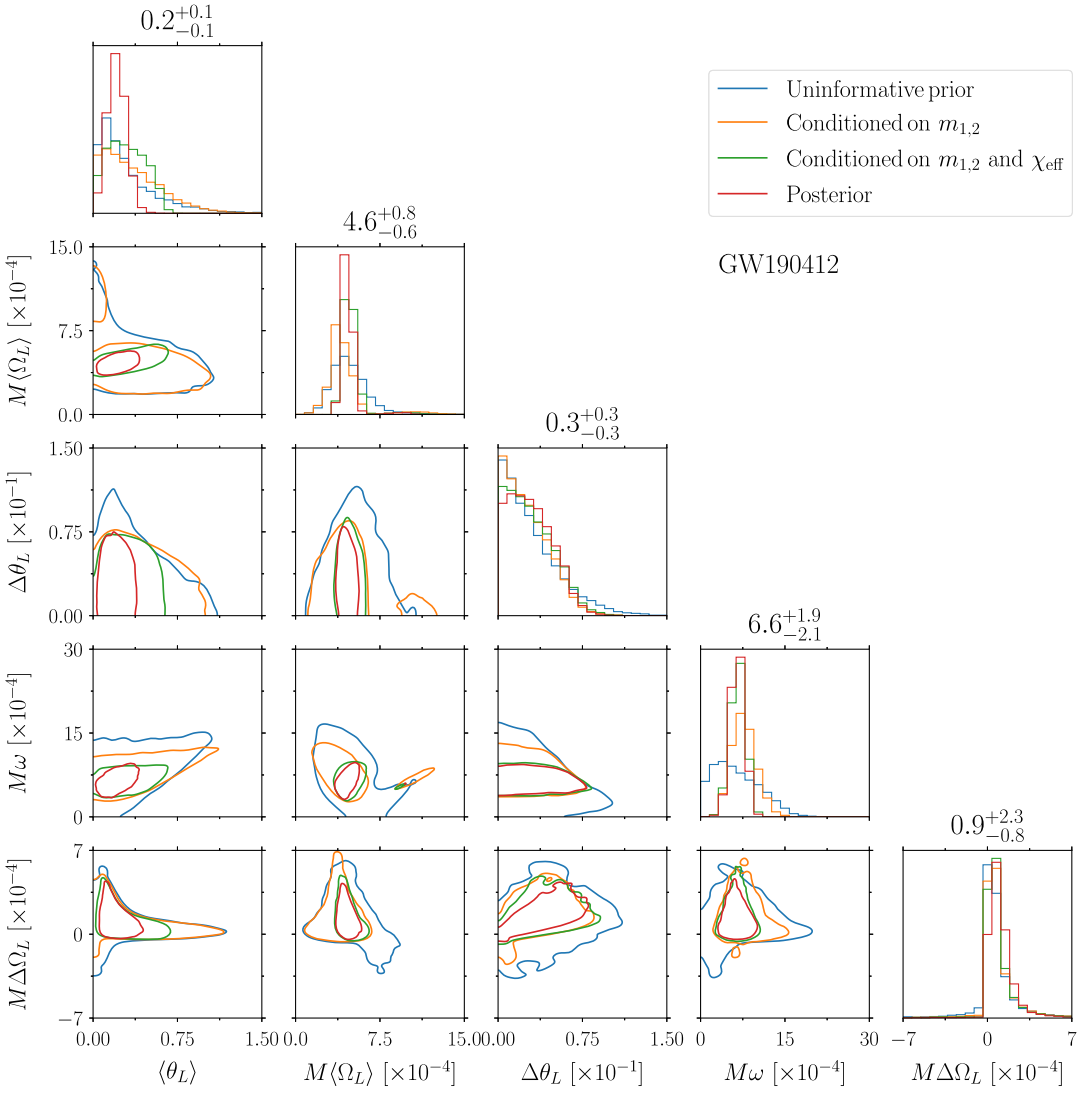

FIG. 3. Revised version of Fig. 3.

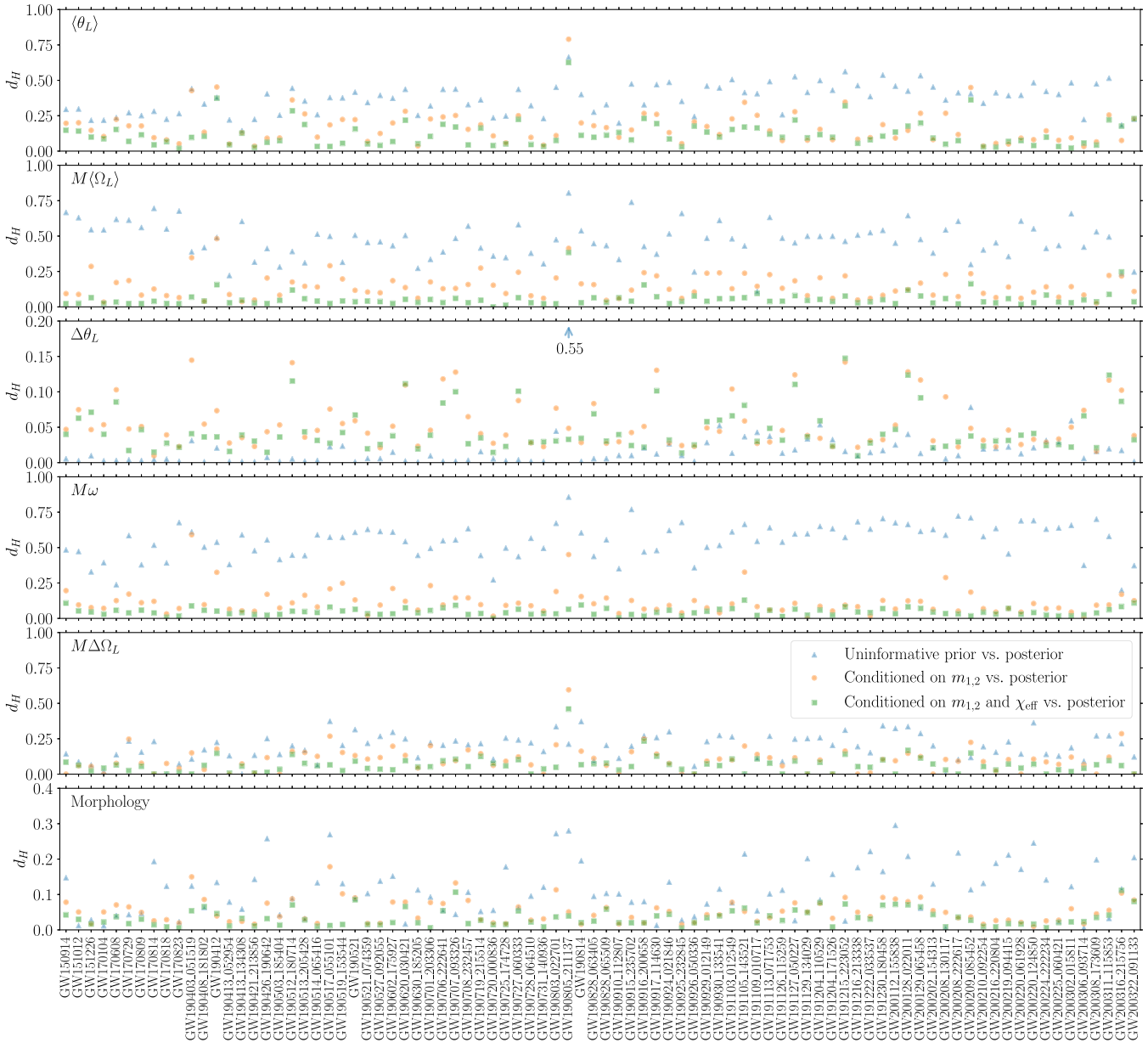

FIG. 4. Revised version of Fig. 4.

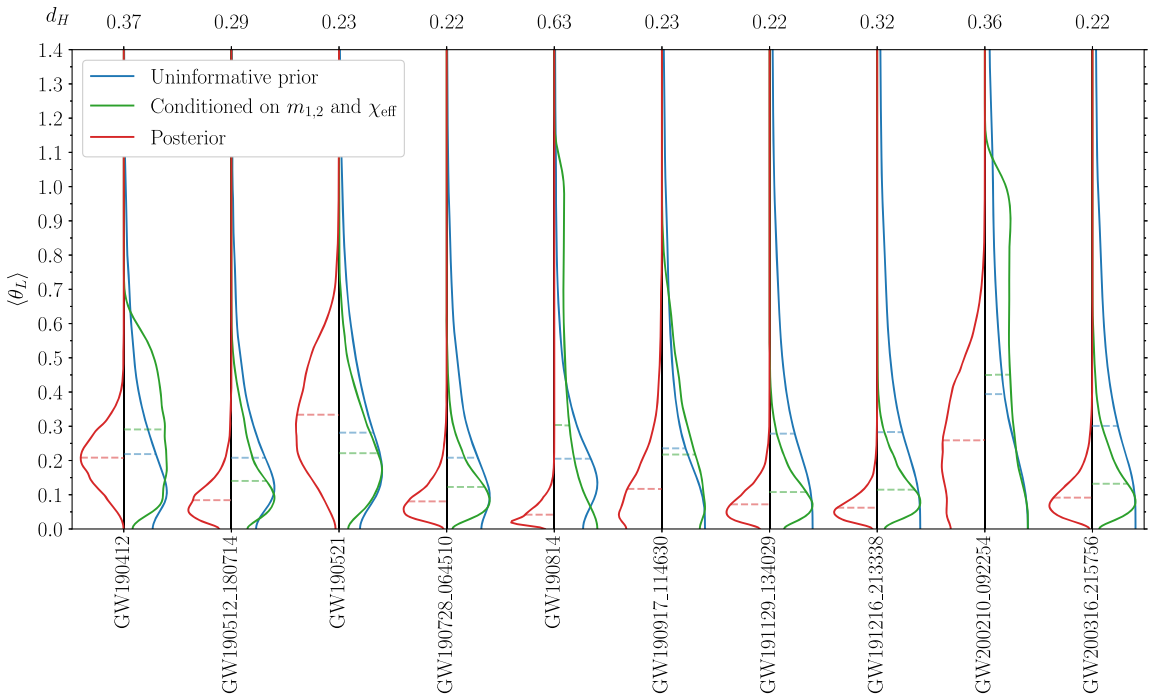

FIG. 5. Revised version of Fig. 5. Note that the gravitational wave event GW190917_114630 now replaces event GW190630_185205 from the original figure.

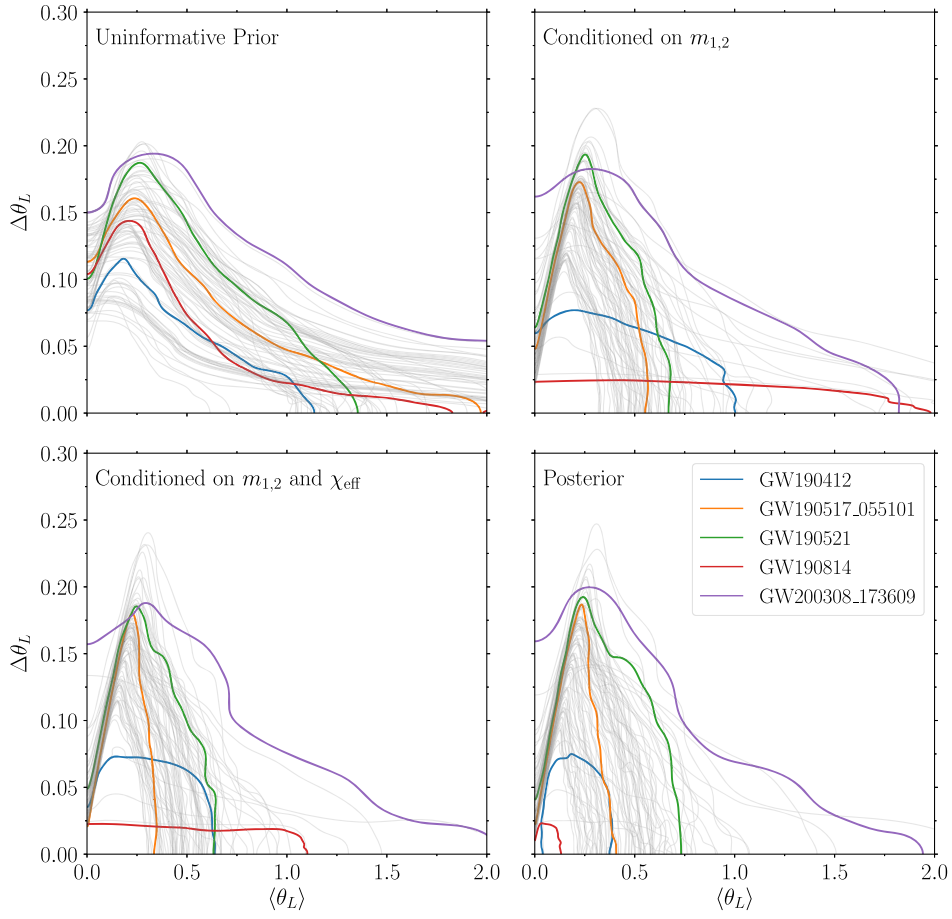

FIG. 6. Revised version of Fig. 6.

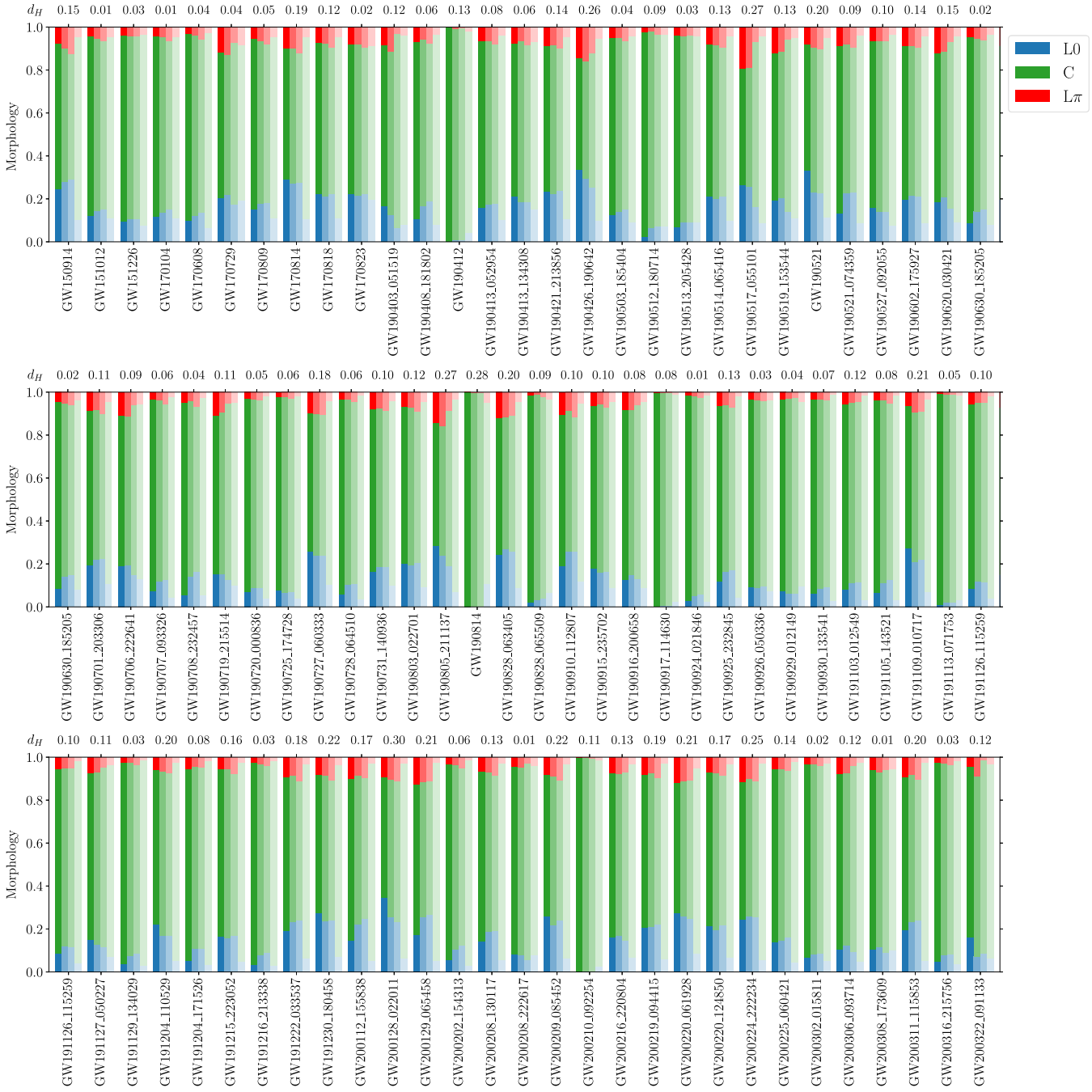

FIG. 7. Revised version of Fig. 7.

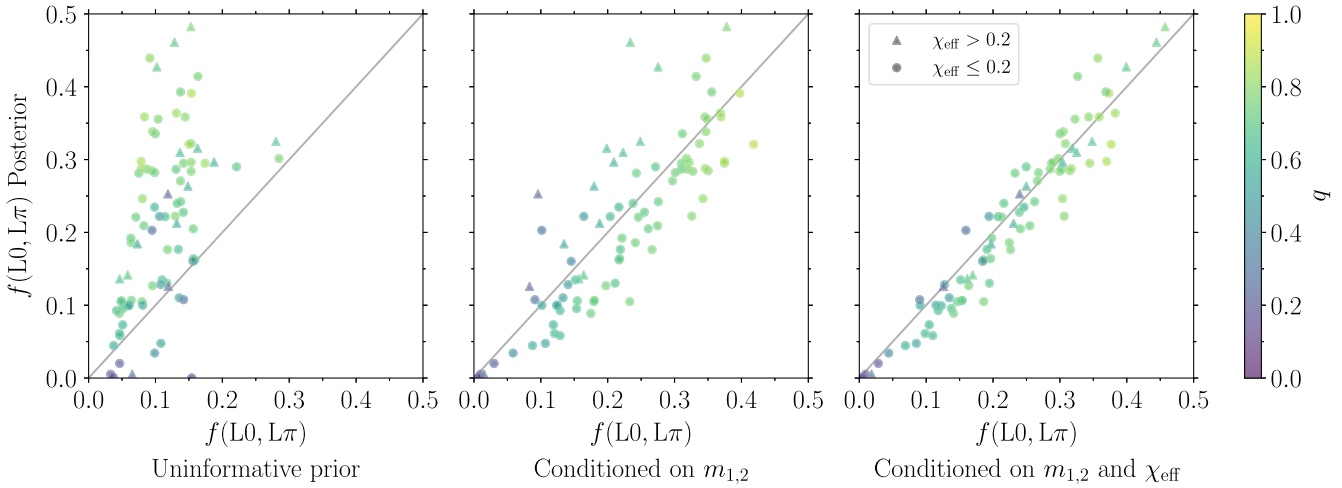

FIG. 8. Revised version of Fig. 8.

TABLE I. Revised version of Table I.

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW150914	Uninformative Prior	$1.8^{+5.7}_{-1.4}$	$13.8^{+20.4}_{-10.1}$	$2.7^{+6.7}_{-2.5}$	$0.8^{+4.4}_{-0.7}$	$6.7^{+125.8}_{-69.0}$	0.1/0.85/0.05
	Conditioned on $m_{1,2}$	$1.6^{+2.0}_{-1.2}$	$17.9^{+3.9}_{-4.0}$	$2.4^{+7.8}_{-2.3}$	$0.4^{+0.4}_{-0.2}$	$0.3^{+51.1}_{-43.5}$	0.29/0.58/0.13
	Conditioned on $m_{1,2}$ and χ_{eff}	$1.5^{+1.9}_{-1.2}$	$17.8^{+3.5}_{-3.4}$	$2.3^{+7.9}_{-2.2}$	$0.4^{+0.3}_{-0.3}$	$0.5^{+51.0}_{-39.7}$	0.28/0.62/0.1
	Posterior	$1.1^{+1.8}_{-0.9}$	$17.7^{+3.4}_{-3.2}$	$2.0^{+7.3}_{-1.9}$	$0.3^{+0.4}_{-0.2}$	$0.6^{+54.8}_{-47.1}$	0.24/0.68/0.08
GW151012	Uninformative Prior	$1.8^{+5.8}_{-1.4}$	$14.0^{+20.4}_{-10.2}$	$2.7^{+6.9}_{-2.5}$	$0.8^{+4.4}_{-0.7}$	$6.8^{+118.5}_{-65.5}$	0.11/0.84/0.05
	Conditioned on $m_{1,2}$	$1.5^{+2.5}_{-1.1}$	$6.7^{+2.8}_{-1.9}$	$2.9^{+7.0}_{-2.7}$	$0.2^{+0.6}_{-0.1}$	$1.9^{+43.0}_{-33.1}$	0.15/0.78/0.07
	Conditioned on $m_{1,2}$ and χ_{eff}	$1.4^{+2.2}_{-1.1}$	$6.8^{+3.1}_{-1.7}$	$2.7^{+7.3}_{-2.5}$	$0.2^{+0.6}_{-0.1}$	$1.5^{+46.9}_{-36.9}$	0.14/0.8/0.05
	Posterior	$1.0^{+1.8}_{-0.8}$	$6.8^{+3.2}_{-1.7}$	$2.3^{+6.4}_{-2.1}$	$0.2^{+0.5}_{-0.1}$	$1.5^{+53.0}_{-44.2}$	0.12/0.84/0.04
GW151226	Uninformative Prior	$1.2^{+4.0}_{-0.9}$	$2.7^{+2.2}_{-1.3}$	$2.0^{+4.8}_{-1.9}$	$0.2^{+0.7}_{-0.2}$	$1.6^{+22.2}_{-14.2}$	0.07/0.89/0.04
	Conditioned on $m_{1,2}$	$1.2^{+2.2}_{-0.9}$	$2.1^{+1.0}_{-0.5}$	$2.6^{+5.8}_{-2.4}$	$0.1^{+0.2}_{-0.1}$	$1.0^{+15.8}_{-12.6}$	0.11/0.85/0.04
	Conditioned on $m_{1,2}$ and χ_{eff}	$1.2^{+1.8}_{-0.8}$	$2.2^{+0.9}_{-0.3}$	$2.8^{+6.2}_{-2.6}$	$0.1^{+0.1}_{-0.1}$	$0.8^{+15.9}_{-13.0}$	0.11/0.85/0.04
	Posterior	$1.1^{+1.4}_{-0.7}$	$2.2^{+0.8}_{-0.2}$	$2.6^{+5.2}_{-2.4}$	$0.1^{+0.1}_{-0.1}$	$1.0^{+13.5}_{-10.9}$	0.1/0.87/0.04
GW170104	Uninformative Prior	$1.8^{+5.8}_{-1.4}$	$13.9^{+19.9}_{-10.1}$	$2.7^{+6.8}_{-2.5}$	$0.8^{+4.5}_{-0.7}$	$6.6^{+122.1}_{-66.9}$	0.11/0.84/0.05
	Conditioned on $m_{1,2}$	$1.7^{+2.4}_{-1.3}$	$12.2^{+4.9}_{-3.8}$	$3.5^{+7.8}_{-3.3}$	$0.5^{+0.6}_{-0.3}$	$3.7^{+79.2}_{-65.6}$	0.15/0.78/0.07
	Conditioned on $m_{1,2}$ and χ_{eff}	$1.6^{+2.5}_{-1.2}$	$12.1^{+5.3}_{-3.8}$	$3.2^{+7.9}_{-3.0}$	$0.5^{+0.6}_{-0.3}$	$3.5^{+78.2}_{-66.1}$	0.14/0.81/0.05
	Posterior	$1.4^{+2.1}_{-1.0}$	$12.1^{+5.1}_{-3.9}$	$3.0^{+7.1}_{-2.8}$	$0.5^{+0.5}_{-0.4}$	$3.9^{+81.0}_{-68.1}$	0.12/0.84/0.04
GW170608	Uninformative Prior	$1.0^{+3.4}_{-0.8}$	$1.3^{+1.0}_{-0.6}$	$1.7^{+4.2}_{-1.6}$	$0.1^{+0.3}_{-0.1}$	$0.8^{+10.3}_{-6.5}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$1.1^{+1.6}_{-0.8}$	$1.8^{+0.6}_{-0.4}$	$2.4^{+5.8}_{-2.2}$	$0.1^{+0.1}_{-0.1}$	$0.4^{+10.9}_{-8.7}$	0.14/0.8/0.06
	Conditioned on $m_{1,2}$ and χ_{eff}	$1.0^{+1.6}_{-0.8}$	$1.8^{+0.6}_{-0.3}$	$2.1^{+6.1}_{-2.0}$	$0.0^{+0.2}_{--0.0}$	$0.3^{+11.3}_{-9.4}$	0.12/0.84/0.04
	Posterior	$0.8^{+1.1}_{-0.6}$	$1.8^{+0.6}_{-0.3}$	$1.8^{+4.9}_{-1.7}$	$0.0^{+0.2}_{--0.0}$	$0.3^{+12.4}_{-10.0}$	0.1/0.87/0.03
GW170729	Uninformative Prior	$2.6^{+5.6}_{-2.0}$	$86.4^{+234.7}_{-71.5}$	$3.7^{+10.0}_{-3.5}$	$5.0^{+11.6}_{-4.4}$	$17.8^{+565.1}_{-403.0}$	0.2/0.72/0.08
	Conditioned on $m_{1,2}$	$2.2^{+3.6}_{-1.7}$	$42.4^{+22.5}_{-18.5}$	$4.0^{+9.3}_{-3.8}$	$2.0^{+2.4}_{-1.3}$	$12.9^{+268.5}_{-219.3}$	0.17/0.75/0.08
	Conditioned on $m_{1,2}$ and χ_{eff}	$1.9^{+2.3}_{-1.3}$	$49.5^{+22.3}_{-21.2}$	$4.7^{+10.1}_{-4.4}$	$1.8^{+1.5}_{-1.0}$	$-0.0^{+343.2}_{-303.6}$	0.22/0.65/0.13
	Posterior	$1.7^{+2.1}_{-1.1}$	$50.3^{+21.1}_{-22.0}$	$4.5^{+9.8}_{-4.2}$	$1.8^{+1.4}_{-1.1}$	$-0.9^{+366.4}_{-340.1}$	0.21/0.68/0.12

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW170809	Uninformative Prior	$1.8^{+5.8}_{-1.4}$	$14.0^{+20.2}_{-10.3}$	$2.7^{+6.9}_{-2.5}$	$0.8^{+4.5}_{-0.7}$	$6.9^{+121.9}_{-66.8}$	0.11/0.84/0.05
	Conditioned on $m_{1,2}$	$1.7^{+2.4}_{-1.3}$	$16.0^{+6.0}_{-4.7}$	$3.4^{+8.2}_{-3.2}$	$0.6^{+0.7}_{-0.4}$	$3.1^{+94.6}_{-76.5}$	0.18/0.74/0.08
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.5^{+2.2}_{-1.1}$	$16.7^{+5.9}_{-4.5}$	$3.2^{+8.6}_{-3.0}$	$0.5^{+0.7}_{-0.3}$	$1.5^{+102.3}_{-87.3}$	0.18/0.76/0.06
	Posterior	$1.2^{+1.9}_{-0.9}$	$16.7^{+5.7}_{-4.5}$	$2.8^{+7.9}_{-2.6}$	$0.5^{+0.7}_{-0.3}$	$1.5^{+106.0}_{-96.3}$	0.15/0.8/0.05
GW170814	Uninformative Prior	$1.8^{+5.8}_{-1.4}$	$13.7^{+20.4}_{-9.9}$	$2.7^{+6.9}_{-2.5}$	$0.8^{+4.4}_{-0.7}$	$6.6^{+121.2}_{-69.8}$	0.11/0.85/0.05
	Conditioned on $m_{1,2}$	$1.5^{+1.9}_{-1.1}$	$14.0^{+3.1}_{-3.1}$	$2.4^{+7.7}_{-2.3}$	$0.3^{+0.4}_{-0.2}$	$0.3^{+44.7}_{-36.8}$	0.28/0.6/0.12
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.4^{+1.7}_{-1.1}$	$14.5^{+2.8}_{-2.7}$	$2.3^{+8.0}_{-2.2}$	$0.3^{+0.3}_{-0.2}$	$-0.0^{+45.7}_{-40.5}$	0.27/0.63/0.1
	Posterior	$1.5^{+1.5}_{-1.1}$	$14.4^{+2.6}_{-2.6}$	$2.3^{+7.9}_{-2.2}$	$0.3^{+0.3}_{-0.2}$	$-0.0^{+39.3}_{-32.7}$	0.29/0.61/0.1
GW170818	Uninformative Prior	$1.8^{+5.8}_{-1.4}$	$14.1^{+20.6}_{-10.3}$	$2.7^{+6.8}_{-2.5}$	$0.8^{+4.5}_{-0.7}$	$6.6^{+121.8}_{-67.9}$	0.11/0.85/0.05
	Conditioned on $m_{1,2}$	$1.7^{+2.2}_{-1.3}$	$18.7^{+5.7}_{-5.3}$	$3.1^{+8.4}_{-2.9}$	$0.6^{+0.6}_{-0.4}$	$1.6^{+86.2}_{-71.9}$	0.23/0.68/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+2.3}_{-1.4}$	$18.0^{+6.2}_{-5.2}$	$3.0^{+8.2}_{-2.8}$	$0.6^{+0.7}_{-0.4}$	$2.8^{+81.1}_{-60.4}$	0.21/0.71/0.08
	Posterior	$1.9^{+2.1}_{-1.3}$	$17.9^{+5.9}_{-5.1}$	$3.1^{+7.6}_{-2.9}$	$0.6^{+0.6}_{-0.4}$	$3.1^{+60.3}_{-45.7}$	0.22/0.7/0.07
GW170823	Uninformative Prior	$2.5^{+5.7}_{-1.9}$	$84.1^{+233.1}_{-69.1}$	$3.7^{+10.1}_{-3.5}$	$4.9^{+11.5}_{-4.3}$	$18.3^{+584.4}_{-411.1}$	0.2/0.72/0.09
	Conditioned on $m_{1,2}$	$1.8^{+2.6}_{-1.3}$	$26.4^{+10.2}_{-9.0}$	$3.3^{+8.8}_{-3.1}$	$0.9^{+1.1}_{-0.6}$	$2.9^{+129.0}_{-103.2}$	0.22/0.68/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.7^{+2.3}_{-1.3}$	$27.4^{+10.8}_{-9.4}$	$3.2^{+9.1}_{-3.0}$	$0.8^{+1.0}_{-0.5}$	$1.0^{+138.0}_{-116.0}$	0.22/0.7/0.08
	Posterior	$1.7^{+2.4}_{-1.3}$	$27.6^{+10.1}_{-9.6}$	$3.2^{+9.3}_{-3.0}$	$0.8^{+1.0}_{-0.5}$	$1.1^{+128.4}_{-109.6}$	0.22/0.7/0.08
GW190403_051519	Uninformative Prior	$5.6^{+15.3}_{-4.8}$	$183.3^{+1080.4}_{-148.1}$	$2.7^{+9.3}_{-2.5}$	$29.2^{+221.3}_{-26.7}$	$140.3^{+1349.0}_{-307.8}$	0.08/0.88/0.04
	Conditioned on $m_{1,2}$	$5.3^{+12.9}_{-4.4}$	$102.0^{+109.6}_{-69.4}$	$3.2^{+8.5}_{-2.9}$	$16.3^{+13.9}_{-11.4}$	$79.5^{+694.2}_{-204.5}$	0.06/0.9/0.03
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.5^{+3.1}_{-1.6}$	$153.7^{+106.5}_{-77.5}$	$5.2^{+9.5}_{-4.8}$	$8.8^{+4.1}_{-4.2}$	$102.2^{+1167.0}_{-1010.7}$	0.12/0.76/0.12
	Posterior	$2.2^{+3.1}_{-1.4}$	$160.7^{+101.8}_{-88.5}$	$4.7^{+9.9}_{-4.3}$	$8.2^{+4.0}_{-3.8}$	$95.0^{+1250.3}_{-1078.4}$	0.17/0.75/0.08
GW190408_181802	Uninformative Prior	$2.1^{+6.2}_{-1.7}$	$8.9^{+8.7}_{-5.0}$	$2.8^{+6.9}_{-2.6}$	$0.8^{+1.2}_{-0.6}$	$6.2^{+70.6}_{-52.0}$	0.08/0.88/0.04
	Conditioned on $m_{1,2}$	$1.6^{+2.1}_{-1.2}$	$10.8^{+3.5}_{-3.0}$	$3.2^{+7.9}_{-3.0}$	$0.3^{+0.5}_{-0.2}$	$1.6^{+58.7}_{-46.0}$	0.19/0.73/0.08
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.5^{+2.0}_{-1.2}$	$10.7^{+3.8}_{-2.7}$	$2.9^{+8.0}_{-2.7}$	$0.3^{+0.4}_{-0.2}$	$1.7^{+56.8}_{-47.4}$	0.17/0.77/0.06
	Posterior	$1.3^{+1.6}_{-1.0}$	$10.7^{+3.8}_{-2.9}$	$2.6^{+7.4}_{-2.4}$	$0.3^{+0.4}_{-0.2}$	$1.8^{+62.8}_{-53.6}$	0.1/0.82/0.07
GW190412	Uninformative Prior	$2.2^{+6.5}_{-1.8}$	$4.6^{+3.3}_{-2.0}$	$2.4^{+5.7}_{-2.2}$	$0.6^{+0.8}_{-0.5}$	$4.3^{+42.6}_{-24.6}$	0.04/0.93/0.02
	Conditioned on $m_{1,2}$	$3.0^{+5.5}_{-2.6}$	$4.0^{+4.3}_{-1.5}$	$2.3^{+3.8}_{-2.1}$	$0.8^{+0.4}_{-0.4}$	$5.3^{+41.4}_{-8.8}$	0.01/0.98/0.01
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.9^{+2.8}_{-2.3}$	$4.8^{+1.2}_{-0.9}$	$2.6^{+4.0}_{-2.3}$	$0.7^{+0.2}_{-0.3}$	$5.8^{+35.3}_{-5.6}$	0.01/0.98/0.01
	Posterior	$2.1^{+1.4}_{-1.3}$	$4.6^{+0.8}_{-0.6}$	$2.7^{+3.6}_{-2.4}$	$0.7^{+0.2}_{-0.2}$	$8.6^{+23.9}_{-8.1}$	0.0/0.99/0.0
GW190413_052954	Uninformative Prior	$2.5^{+7.3}_{-2.0}$	$22.5^{+26.4}_{-12.9}$	$3.3^{+8.1}_{-3.1}$	$1.9^{+3.6}_{-1.5}$	$15.2^{+187.1}_{-122.6}$	0.1/0.86/0.04
	Conditioned on $m_{1,2}$	$1.9^{+3.1}_{-1.4}$	$26.3^{+14.6}_{-10.5}$	$3.8^{+8.7}_{-3.5}$	$1.1^{+1.5}_{-0.7}$	$7.4^{+169.5}_{-143.2}$	0.18/0.75/0.08
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+2.9}_{-1.4}$	$26.5^{+17.2}_{-11.9}$	$3.6^{+8.8}_{-3.4}$	$1.1^{+1.3}_{-0.7}$	$6.6^{+175.1}_{-135.3}$	0.17/0.76/0.07
	Posterior	$1.7^{+2.8}_{-1.3}$	$27.0^{+16.3}_{-12.2}$	$3.5^{+8.8}_{-3.3}$	$1.1^{+1.2}_{-0.7}$	$5.7^{+180.1}_{-136.9}$	0.16/0.77/0.07
GW190413_134308	Uninformative Prior	$2.9^{+7.6}_{-2.2}$	$96.4^{+201.4}_{-81.5}$	$3.8^{+10.0}_{-3.5}$	$7.2^{+11.6}_{-6.1}$	$34.2^{+661.6}_{-486.6}$	0.15/0.78/0.07
	Conditioned on $m_{1,2}$	$2.2^{+3.5}_{-1.6}$	$51.9^{+27.0}_{-23.7}$	$4.0^{+9.7}_{-3.7}$	$2.3^{+2.7}_{-1.5}$	$12.3^{+307.0}_{-300.8}$	0.18/0.73/0.09
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.2^{+3.5}_{-1.7}$	$51.2^{+28.2}_{-23.1}$	$3.9^{+9.5}_{-3.7}$	$2.3^{+2.5}_{-1.5}$	$14.0^{+305.4}_{-229.7}$	0.18/0.75/0.06
	Posterior	$2.8^{+3.8}_{-2.1}$	$52.0^{+24.6}_{-22.4}$	$4.0^{+9.7}_{-3.8}$	$2.4^{+2.4}_{-1.6}$	$13.5^{+214.5}_{-161.5}$	0.21/0.71/0.08

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW190421_213856	Uninformative Prior	$2.6^{+7.8}_{-2.0}$	$33.4^{+39.3}_{-21.0}$	$3.5^{+8.6}_{-3.2}$	$2.8^{+4.4}_{-2.1}$	$20.8^{+266.2}_{-181.2}$	0.1/0.85/0.05
	Conditioned on $m_{1,2}$	$2.0^{+2.7}_{-1.5}$	$36.8^{+15.2}_{-13.6}$	$3.3^{+9.0}_{-3.1}$	$1.2^{+1.6}_{-0.7}$	$3.4^{+164.9}_{-128.1}$	0.24/0.66/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+2.8}_{-1.4}$	$36.2^{+16.8}_{-14.1}$	$3.2^{+8.9}_{-3.0}$	$1.2^{+1.5}_{-0.8}$	$4.3^{+160.2}_{-123.5}$	0.22/0.69/0.09
	Posterior	$2.0^{+2.8}_{-1.5}$	$36.6^{+15.7}_{-14.8}$	$3.4^{+9.3}_{-3.2}$	$1.2^{+1.5}_{-0.8}$	$4.4^{+144.3}_{-109.5}$	0.23/0.68/0.09
GW190426_190642	Uninformative Prior	$6.0^{+15.4}_{-5.0}$	$493.1^{+2961.6}_{-427.8}$	$3.4^{+10.7}_{-3.1}$	$67.1^{+501.6}_{-61.5}$	$356.0^{+3757.4}_{-910.3}$	0.1/0.85/0.05
	Conditioned on $m_{1,2}$	$2.9^{+5.8}_{-2.1}$	$250.8^{+151.0}_{-125.5}$	$3.9^{+11.4}_{-3.7}$	$11.3^{+22.8}_{-7.2}$	$29.1^{+1133.0}_{-844.5}$	0.25/0.62/0.12
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.5^{+3.4}_{-1.7}$	$296.0^{+193.9}_{-148.2}$	$4.2^{+12.3}_{-4.0}$	$11.1^{+11.0}_{-6.9}$	$-3.3^{+1386.9}_{-1314.4}$	0.3/0.54/0.16
	Posterior	$2.7^{+3.8}_{-1.9}$	$298.5^{+202.6}_{-149.4}$	$4.3^{+12.6}_{-4.1}$	$11.3^{+10.5}_{-6.9}$	$-3.1^{+1179.1}_{-1159.5}$	0.34/0.52/0.15
GW190503_185404	Uninformative Prior	$2.5^{+7.4}_{-2.0}$	$21.4^{+26.5}_{-14.0}$	$3.2^{+8.0}_{-2.9}$	$1.9^{+3.1}_{-1.5}$	$14.0^{+174.6}_{-118.4}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$1.9^{+3.0}_{-1.4}$	$25.0^{+12.6}_{-10.1}$	$4.0^{+8.7}_{-3.7}$	$1.1^{+1.2}_{-0.7}$	$9.0^{+166.8}_{-153.9}$	0.15/0.78/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+3.0}_{-1.5}$	$25.0^{+13.7}_{-10.9}$	$3.7^{+8.6}_{-3.4}$	$1.1^{+1.1}_{-0.7}$	$8.1^{+178.2}_{-149.9}$	0.14/0.81/0.05
	Posterior	$1.7^{+2.6}_{-1.3}$	$25.2^{+13.9}_{-11.2}$	$3.4^{+8.3}_{-3.2}$	$1.1^{+1.0}_{-0.7}$	$6.7^{+195.3}_{-174.5}$	0.13/0.82/0.05
GW190512_180714	Uninformative Prior	$2.1^{+6.3}_{-1.7}$	$7.6^{+7.7}_{-4.6}$	$2.6^{+6.9}_{-2.4}$	$0.7^{+1.0}_{-0.5}$	$5.0^{+64.2}_{-40.2}$	0.07/0.89/0.03
	Conditioned on $m_{1,2}$	$1.7^{+2.9}_{-1.3}$	$6.4^{+4.0}_{-1.8}$	$3.4^{+6.7}_{-3.1}$	$0.4^{+0.4}_{-0.3}$	$4.9^{+57.3}_{-51.1}$	0.07/0.89/0.03
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.4^{+2.6}_{-1.1}$	$6.5^{+4.5}_{-1.3}$	$3.0^{+6.9}_{-2.8}$	$0.4^{+0.3}_{-0.3}$	$4.6^{+63.5}_{-59.9}$	0.06/0.91/0.02
	Posterior	$0.8^{+1.4}_{-0.6}$	$6.6^{+4.9}_{-1.4}$	$2.2^{+5.8}_{-2.0}$	$0.4^{+0.3}_{-0.3}$	$3.2^{+87.8}_{-102.6}$	0.02/0.95/0.02
GW190513_205428	Uninformative Prior	$2.5^{+7.8}_{-2.0}$	$18.0^{+20.6}_{-11.2}$	$3.1^{+7.5}_{-2.9}$	$1.7^{+2.6}_{-1.3}$	$11.9^{+145.1}_{-100.9}$	0.09/0.86/0.04
	Conditioned on $m_{1,2}$	$2.0^{+4.1}_{-1.5}$	$14.9^{+10.7}_{-5.5}$	$3.7^{+7.6}_{-3.4}$	$1.1^{+1.1}_{-0.8}$	$11.3^{+134.0}_{-108.3}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+3.0}_{-1.4}$	$16.1^{+11.0}_{-5.2}$	$3.7^{+8.0}_{-3.4}$	$1.0^{+0.8}_{-0.7}$	$10.3^{+166.7}_{-128.0}$	0.09/0.87/0.04
	Posterior	$1.3^{+2.0}_{-1.0}$	$16.5^{+10.9}_{-5.7}$	$3.4^{+7.4}_{-3.1}$	$1.0^{+0.7}_{-0.7}$	$10.6^{+202.0}_{-198.5}$	0.07/0.89/0.04
GW190514_065416	Uninformative Prior	$3.3^{+11.2}_{-2.6}$	$60.3^{+91.7}_{-48.6}$	$3.4^{+9.3}_{-3.2}$	$6.2^{+13.4}_{-5.3}$	$34.7^{+521.3}_{-283.5}$	0.1/0.86/0.04
	Conditioned on $m_{1,2}$	$2.0^{+3.0}_{-1.5}$	$38.9^{+18.0}_{-15.8}$	$3.5^{+9.3}_{-3.2}$	$1.4^{+2.0}_{-0.9}$	$5.8^{+212.8}_{-161.1}$	0.21/0.69/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.4^{+3.4}_{-1.8}$	$35.2^{+20.9}_{-16.3}$	$3.4^{+8.6}_{-3.2}$	$1.6^{+2.1}_{-1.0}$	$10.3^{+172.6}_{-135.6}$	0.2/0.71/0.09
	Posterior	$2.3^{+3.5}_{-1.7}$	$35.1^{+20.9}_{-16.4}$	$3.5^{+8.5}_{-3.3}$	$1.6^{+2.0}_{-1.0}$	$11.2^{+155.7}_{-110.5}$	0.21/0.71/0.08
GW190517_055101	Uninformative Prior	$2.7^{+10.0}_{-2.2}$	$23.0^{+30.4}_{-15.2}$	$2.9^{+8.2}_{-2.7}$	$2.3^{+4.9}_{-1.8}$	$14.4^{+188.5}_{-101.3}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$1.9^{+3.0}_{-1.4}$	$22.1^{+10.2}_{-7.5}$	$3.8^{+8.4}_{-3.5}$	$0.9^{+1.4}_{-0.6}$	$6.7^{+147.4}_{-120.3}$	0.16/0.77/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+1.5}_{-1.0}$	$26.5^{+9.1}_{-7.6}$	$4.8^{+8.4}_{-4.3}$	$0.9^{+0.7}_{-0.5}$	$-3.3^{+212.6}_{-199.2}$	0.26/0.56/0.19
	Posterior	$1.6^{+1.7}_{-1.0}$	$26.3^{+9.3}_{-7.0}$	$4.5^{+8.8}_{-4.0}$	$0.8^{+0.7}_{-0.4}$	$-2.2^{+170.0}_{-156.0}$	0.27/0.54/0.2
GW190519_153544	Uninformative Prior	$3.1^{+9.1}_{-2.5}$	$65.1^{+63.3}_{-38.5}$	$3.8^{+9.1}_{-3.5}$	$5.9^{+10.4}_{-4.4}$	$42.0^{+512.4}_{-294.8}$	0.11/0.84/0.05
	Conditioned on $m_{1,2}$	$2.4^{+3.8}_{-1.8}$	$63.7^{+34.7}_{-27.4}$	$5.0^{+9.9}_{-4.6}$	$3.4^{+2.9}_{-1.9}$	$31.4^{+449.4}_{-413.5}$	0.14/0.8/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.1^{+2.2}_{-1.4}$	$75.9^{+30.8}_{-30.1}$	$6.1^{+11.0}_{-5.6}$	$2.9^{+1.8}_{-1.5}$	$9.1^{+629.1}_{-583.5}$	0.2/0.68/0.11
	Posterior	$2.0^{+2.0}_{-1.3}$	$77.2^{+27.1}_{-32.3}$	$5.8^{+9.8}_{-5.3}$	$2.9^{+1.5}_{-1.4}$	$10.1^{+660.4}_{-622.9}$	0.19/0.68/0.12
GW190521	Uninformative Prior	$2.8^{+7.4}_{-2.2}$	$55.6^{+58.8}_{-32.4}$	$3.9^{+9.4}_{-3.6}$	$4.6^{+8.3}_{-3.6}$	$37.1^{+459.8}_{-308.7}$	0.11/0.84/0.05
	Conditioned on $m_{1,2}$	$2.2^{+3.5}_{-1.6}$	$63.5^{+28.1}_{-26.6}$	$3.7^{+9.7}_{-3.5}$	$2.4^{+3.5}_{-1.5}$	$8.5^{+330.9}_{-236.3}$	0.23/0.67/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.2^{+3.2}_{-1.6}$	$65.5^{+32.1}_{-31.2}$	$3.7^{+10.0}_{-3.5}$	$2.4^{+2.8}_{-1.5}$	$7.2^{+318.7}_{-223.2}$	0.23/0.67/0.1
	Posterior	$3.3^{+3.0}_{-2.3}$	$67.1^{+32.3}_{-31.8}$	$4.0^{+10.1}_{-3.8}$	$2.7^{+2.6}_{-1.5}$	$6.4^{+189.4}_{-123.0}$	0.33/0.59/0.08

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW190521_074359	Uninformative Prior	$2.6^{+8.0}_{-2.1}$	$21.7^{+19.0}_{-12.6}$	$3.1^{+7.9}_{-2.9}$	$2.1^{+2.6}_{-1.6}$	$14.5^{+168.9}_{-113.8}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$1.8^{+2.4}_{-1.3}$	$27.6^{+7.7}_{-8.0}$	$3.5^{+8.8}_{-3.3}$	$0.9^{+0.8}_{-0.5}$	$2.6^{+126.8}_{-111.2}$	0.23/0.67/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.7^{+1.9}_{-1.3}$	$29.3^{+6.6}_{-8.2}$	$3.4^{+9.3}_{-3.2}$	$0.8^{+0.7}_{-0.5}$	$-0.0^{+135.1}_{-125.2}$	0.23/0.69/0.08
	Posterior	$1.4^{+1.4}_{-1.0}$	$29.6^{+5.9}_{-8.5}$	$3.1^{+7.7}_{-2.9}$	$0.8^{+0.6}_{-0.5}$	$-0.3^{+146.1}_{-148.4}$	0.13/0.78/0.09
GW190527_092055	Uninformative Prior	$3.5^{+12.4}_{-2.9}$	$51.9^{+76.2}_{-41.9}$	$3.0^{+8.9}_{-2.8}$	$5.8^{+13.8}_{-4.9}$	$30.6^{+431.6}_{-225.1}$	0.08/0.89/0.04
	Conditioned on $m_{1,2}$	$2.0^{+3.7}_{-1.5}$	$21.2^{+30.0}_{-9.2}$	$3.7^{+8.1}_{-3.4}$	$1.1^{+2.0}_{-0.8}$	$9.1^{+166.4}_{-123.3}$	0.14/0.8/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+3.1}_{-1.3}$	$22.9^{+32.1}_{-10.4}$	$3.8^{+8.8}_{-3.5}$	$1.1^{+1.7}_{-0.8}$	$7.1^{+195.2}_{-160.6}$	0.14/0.79/0.07
	Posterior	$1.9^{+3.3}_{-1.5}$	$23.4^{+31.6}_{-10.9}$	$3.8^{+8.9}_{-3.5}$	$1.1^{+1.7}_{-0.8}$	$6.2^{+160.6}_{-142.6}$	0.16/0.78/0.06
GW190602_175927	Uninformative Prior	$4.0^{+13.1}_{-3.3}$	$99.4^{+156.8}_{-81.1}$	$3.2^{+9.8}_{-3.0}$	$11.7^{+32.0}_{-10.3}$	$61.3^{+897.3}_{-350.5}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$2.4^{+3.8}_{-1.8}$	$82.3^{+39.3}_{-39.2}$	$4.0^{+10.2}_{-3.7}$	$3.5^{+3.9}_{-2.1}$	$15.1^{+432.0}_{-364.4}$	0.21/0.69/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.1^{+3.1}_{-1.6}$	$87.8^{+41.3}_{-41.3}$	$4.1^{+10.8}_{-3.8}$	$3.4^{+3.1}_{-2.1}$	$5.8^{+509.7}_{-442.9}$	0.22/0.7/0.09
	Posterior	$2.0^{+2.8}_{-1.5}$	$89.9^{+39.0}_{-44.6}$	$4.1^{+10.0}_{-3.8}$	$3.4^{+3.0}_{-2.0}$	$3.6^{+516.1}_{-450.7}$	0.2/0.71/0.09
GW190620_030421	Uninformative Prior	$3.3^{+10.6}_{-2.6}$	$62.8^{+91.6}_{-47.9}$	$3.4^{+9.4}_{-3.2}$	$6.5^{+13.3}_{-5.5}$	$36.5^{+570.8}_{-244.8}$	0.09/0.86/0.04
	Conditioned on $m_{1,2}$	$2.3^{+4.1}_{-1.7}$	$51.5^{+29.3}_{-24.5}$	$4.4^{+9.5}_{-4.1}$	$2.7^{+3.1}_{-1.7}$	$21.7^{+383.6}_{-269.7}$	0.16/0.78/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.0^{+2.5}_{-1.3}$	$60.9^{+29.0}_{-26.7}$	$5.3^{+10.2}_{-4.9}$	$2.3^{+1.9}_{-1.3}$	$4.3^{+446.3}_{-377.6}$	0.21/0.67/0.12
	Posterior	$1.8^{+2.2}_{-1.2}$	$61.6^{+27.6}_{-28.3}$	$4.9^{+9.6}_{-4.5}$	$2.3^{+1.8}_{-1.2}$	$4.9^{+479.1}_{-447.0}$	0.19/0.69/0.12
GW190630_185205	Uninformative Prior	$2.4^{+7.3}_{-1.9}$	$16.9^{+18.6}_{-11.4}$	$3.1^{+7.7}_{-2.9}$	$1.6^{+3.4}_{-1.4}$	$11.8^{+158.8}_{-85.2}$	0.08/0.88/0.04
	Conditioned on $m_{1,2}$	$1.7^{+2.6}_{-1.2}$	$15.3^{+6.4}_{-4.3}$	$3.8^{+8.2}_{-3.5}$	$0.6^{+0.7}_{-0.4}$	$5.1^{+106.8}_{-90.3}$	0.15/0.79/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+2.1}_{-1.2}$	$16.2^{+6.2}_{-3.9}$	$3.6^{+8.9}_{-3.3}$	$0.6^{+0.6}_{-0.4}$	$2.8^{+116.0}_{-105.5}$	0.14/0.81/0.05
	Posterior	$1.1^{+1.4}_{-0.8}$	$16.4^{+6.4}_{-4.2}$	$2.9^{+6.7}_{-2.7}$	$0.6^{+0.6}_{-0.4}$	$1.6^{+135.2}_{-134.0}$	0.08/0.87/0.05
GW190701_203306	Uninformative Prior	$2.8^{+8.4}_{-2.2}$	$41.3^{+46.2}_{-25.7}$	$3.5^{+8.7}_{-3.3}$	$3.7^{+5.6}_{-2.8}$	$24.9^{+347.1}_{-207.7}$	0.11/0.85/0.05
	Conditioned on $m_{1,2}$	$2.1^{+3.0}_{-1.6}$	$50.1^{+20.9}_{-20.6}$	$3.6^{+9.5}_{-3.4}$	$1.8^{+2.1}_{-1.1}$	$6.3^{+246.7}_{-185.8}$	0.23/0.67/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.2^{+3.1}_{-1.7}$	$48.7^{+22.3}_{-20.7}$	$3.4^{+9.4}_{-3.2}$	$1.8^{+2.1}_{-1.1}$	$8.5^{+223.2}_{-164.4}$	0.22/0.7/0.08
	Posterior	$2.0^{+2.9}_{-1.5}$	$48.9^{+22.3}_{-22.0}$	$3.3^{+9.3}_{-3.1}$	$1.8^{+2.0}_{-1.2}$	$8.2^{+236.1}_{-171.8}$	0.2/0.72/0.09
GW190706_222641	Uninformative Prior	$3.1^{+8.4}_{-2.5}$	$85.6^{+121.6}_{-60.9}$	$3.9^{+9.9}_{-3.6}$	$6.9^{+12.1}_{-5.3}$	$45.2^{+651.9}_{-433.4}$	0.13/0.81/0.06
	Conditioned on $m_{1,2}$	$2.7^{+4.5}_{-2.1}$	$81.4^{+51.3}_{-42.6}$	$4.9^{+10.1}_{-4.6}$	$4.9^{+4.3}_{-2.9}$	$40.2^{+632.0}_{-472.6}$	0.15/0.79/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.3^{+2.9}_{-1.6}$	$97.3^{+49.5}_{-49.0}$	$5.5^{+11.3}_{-5.0}$	$4.3^{+2.7}_{-2.2}$	$20.3^{+779.2}_{-682.7}$	0.19/0.7/0.11
	Posterior	$1.9^{+2.5}_{-1.3}$	$100.3^{+42.6}_{-54.2}$	$5.1^{+10.4}_{-4.6}$	$4.1^{+2.5}_{-2.2}$	$18.4^{+767.9}_{-706.7}$	0.19/0.7/0.11
GW190707_093326	Uninformative Prior	$1.9^{+6.8}_{-1.5}$	$2.1^{+1.3}_{-0.8}$	$1.9^{+5.0}_{-1.7}$	$0.3^{+0.5}_{-0.3}$	$1.9^{+17.5}_{-8.9}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$	$1.2^{+1.6}_{-0.9}$	$2.3^{+0.8}_{-0.5}$	$2.7^{+6.0}_{-2.5}$	$0.1^{+0.1}_{-0.1}$	$0.7^{+15.1}_{-11.8}$	0.13/0.82/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.1^{+1.6}_{-0.9}$	$2.3^{+0.9}_{-0.4}$	$2.3^{+6.2}_{-2.1}$	$0.1^{+0.1}_{-0.1}$	$0.6^{+14.9}_{-13.7}$	0.12/0.85/0.04
	Posterior	$0.8^{+1.1}_{-0.6}$	$2.3^{+1.0}_{-0.4}$	$1.9^{+5.3}_{-1.8}$	$0.1^{+0.1}_{-0.1}$	$0.6^{+18.5}_{-17.9}$	0.07/0.89/0.03
GW190708_232457	Uninformative Prior	$2.1^{+7.1}_{-1.7}$	$4.3^{+2.9}_{-1.8}$	$2.3^{+5.7}_{-2.1}$	$0.5^{+1.0}_{-0.4}$	$3.6^{+35.6}_{-20.0}$	0.05/0.92/0.03
	Conditioned on $m_{1,2}$	$1.3^{+1.9}_{-0.9}$	$5.0^{+1.7}_{-1.0}$	$2.9^{+6.8}_{-2.7}$	$0.2^{+0.2}_{-0.1}$	$1.0^{+29.2}_{-24.2}$	0.16/0.77/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.2^{+1.8}_{-1.0}$	$5.1^{+1.7}_{-0.8}$	$2.5^{+7.3}_{-2.3}$	$0.1^{+0.3}_{-0.1}$	$0.6^{+31.0}_{-24.3}$	0.14/0.81/0.04
	Posterior	$0.8^{+1.5}_{-0.6}$	$5.1^{+1.8}_{-0.8}$	$2.0^{+5.7}_{-1.9}$	$0.1^{+0.3}_{-0.1}$	$0.8^{+31.0}_{-27.7}$	0.06/0.9/0.05

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW190719_215514	Uninformative Prior	$3.0^{+9.3}_{-2.4}$	$64.9^{+88.8}_{-49.7}$	$3.7^{+9.3}_{-3.4}$	$5.8^{+13.8}_{-4.9}$	$39.3^{+560.8}_{-319.5}$	0.1/0.85/0.05
	Conditioned on $m_{1,2}$	$2.1^{+4.6}_{-1.6}$	$25.0^{+18.4}_{-11.0}$	$3.7^{+8.5}_{-3.4}$	$1.5^{+2.7}_{-1.1}$	$12.6^{+185.8}_{-177.5}$	0.13/0.82/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+2.7}_{-1.3}$	$29.0^{+19.9}_{-12.9}$	$4.4^{+9.5}_{-4.0}$	$1.3^{+1.6}_{-0.9}$	$9.2^{+225.5}_{-196.7}$	0.15/0.75/0.1
	Posterior	$1.8^{+2.6}_{-1.3}$	$29.3^{+18.5}_{-13.3}$	$4.3^{+8.6}_{-3.9}$	$1.3^{+1.5}_{-0.9}$	$9.6^{+205.4}_{-198.0}$	0.15/0.74/0.11
GW190720_000836	Uninformative Prior	$2.0^{+7.0}_{-1.7}$	$2.3^{+1.6}_{-0.9}$	$2.0^{+4.9}_{-1.8}$	$0.3^{+0.6}_{-0.3}$	$2.0^{+20.0}_{-10.3}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$	$1.3^{+2.8}_{-1.0}$	$2.3^{+1.3}_{-0.6}$	$2.7^{+5.6}_{-2.5}$	$0.1^{+0.3}_{-0.1}$	$1.5^{+19.3}_{-14.4}$	0.09/0.88/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+2.2}_{-0.9}$	$2.5^{+1.1}_{-0.4}$	$2.8^{+6.1}_{-2.6}$	$0.1^{+0.2}_{-0.1}$	$1.4^{+18.8}_{-14.7}$	0.09/0.88/0.03
	Posterior	$1.0^{+1.6}_{-0.7}$	$2.5^{+1.2}_{-0.4}$	$2.8^{+5.6}_{-2.6}$	$0.1^{+0.2}_{-0.1}$	$1.7^{+27.6}_{-20.9}$	0.07/0.9/0.03
GW190725_174728	Uninformative Prior	$1.9^{+6.9}_{-1.6}$	$1.8^{+1.6}_{-0.9}$	$1.9^{+4.9}_{-1.8}$	$0.2^{+0.6}_{-0.2}$	$1.5^{+17.0}_{-8.3}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$	$1.4^{+4.1}_{-1.1}$	$1.8^{+1.1}_{-0.5}$	$2.3^{+5.4}_{-2.1}$	$0.1^{+0.4}_{-0.1}$	$1.3^{+15.3}_{-10.9}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+3.2}_{-1.0}$	$1.8^{+1.5}_{-0.3}$	$2.2^{+5.3}_{-2.0}$	$0.1^{+0.4}_{-0.1}$	$1.3^{+16.0}_{-12.3}$	0.07/0.91/0.02
	Posterior	$1.2^{+2.7}_{-0.9}$	$1.8^{+1.5}_{-0.3}$	$2.2^{+5.2}_{-2.0}$	$0.1^{+0.3}_{-0.1}$	$1.3^{+17.8}_{-14.3}$	0.08/0.9/0.02
GW190727_060333	Uninformative Prior	$2.5^{+6.7}_{-1.9}$	$29.1^{+28.2}_{-15.8}$	$3.5^{+8.3}_{-3.2}$	$2.4^{+3.9}_{-1.8}$	$19.2^{+230.6}_{-170.6}$	0.1/0.86/0.04
	Conditioned on $m_{1,2}$	$1.9^{+2.7}_{-1.4}$	$34.3^{+12.8}_{-12.5}$	$3.3^{+8.9}_{-3.1}$	$1.1^{+1.4}_{-0.7}$	$2.7^{+153.6}_{-114.9}$	0.24/0.65/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+2.3}_{-1.3}$	$36.1^{+13.6}_{-13.0}$	$3.3^{+9.3}_{-3.1}$	$1.0^{+1.3}_{-0.6}$	$0.1^{+162.6}_{-130.9}$	0.24/0.66/0.1
	Posterior	$1.8^{+2.4}_{-1.4}$	$36.2^{+13.0}_{-12.7}$	$3.2^{+9.4}_{-3.0}$	$1.0^{+1.1}_{-0.6}$	$0.1^{+144.0}_{-105.1}$	0.26/0.64/0.1
GW190728_064510	Uninformative Prior	$2.1^{+6.9}_{-1.8}$	$1.8^{+1.5}_{-0.8}$	$1.8^{+4.7}_{-1.6}$	$0.3^{+0.4}_{-0.3}$	$1.7^{+16.1}_{-7.8}$	0.04/0.95/0.01
	Conditioned on $m_{1,2}$	$1.3^{+2.5}_{-1.0}$	$2.3^{+1.0}_{-0.6}$	$2.6^{+5.8}_{-2.4}$	$0.1^{+0.3}_{-0.1}$	$1.0^{+16.9}_{-12.8}$	0.11/0.85/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.2^{+2.1}_{-0.9}$	$2.4^{+1.0}_{-0.3}$	$2.7^{+6.2}_{-2.5}$	$0.1^{+0.2}_{-0.1}$	$0.9^{+16.7}_{-13.6}$	0.1/0.86/0.04
	Posterior	$0.8^{+1.3}_{-0.6}$	$2.4^{+1.1}_{-0.3}$	$2.1^{+5.0}_{-1.9}$	$0.1^{+0.2}_{-0.1}$	$0.8^{+24.0}_{-20.6}$	0.06/0.9/0.03
GW190731_140936	Uninformative Prior	$3.0^{+9.4}_{-2.4}$	$39.0^{+50.9}_{-26.6}$	$3.4^{+8.4}_{-3.2}$	$3.9^{+7.3}_{-3.2}$	$24.6^{+304.2}_{-210.2}$	0.1/0.86/0.04
	Conditioned on $m_{1,2}$	$2.0^{+3.2}_{-1.5}$	$36.0^{+17.0}_{-15.9}$	$3.7^{+9.2}_{-3.5}$	$1.5^{+1.6}_{-1.0}$	$7.3^{+202.1}_{-172.7}$	0.19/0.72/0.09
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+2.7}_{-1.5}$	$38.0^{+17.3}_{-17.1}$	$3.7^{+9.5}_{-3.4}$	$1.4^{+1.4}_{-0.9}$	$3.2^{+227.6}_{-193.0}$	0.19/0.74/0.07
	Posterior	$1.7^{+2.7}_{-1.3}$	$38.2^{+16.6}_{-17.7}$	$3.5^{+9.4}_{-3.3}$	$1.4^{+1.3}_{-0.9}$	$4.1^{+229.6}_{-198.9}$	0.16/0.76/0.08
GW190803_022701	Uninformative Prior	$2.7^{+8.0}_{-2.1}$	$30.1^{+36.5}_{-18.7}$	$3.3^{+8.3}_{-3.0}$	$2.7^{+5.0}_{-2.1}$	$19.3^{+258.0}_{-155.7}$	0.09/0.86/0.04
	Conditioned on $m_{1,2}$	$1.9^{+2.9}_{-1.4}$	$30.8^{+13.7}_{-12.3}$	$3.4^{+9.0}_{-3.2}$	$1.1^{+1.5}_{-0.7}$	$4.8^{+169.4}_{-123.6}$	0.21/0.7/0.09
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+2.9}_{-1.5}$	$30.9^{+14.9}_{-13.2}$	$3.4^{+8.8}_{-3.2}$	$1.1^{+1.4}_{-0.7}$	$4.8^{+150.6}_{-128.1}$	0.19/0.73/0.07
	Posterior	$1.9^{+2.9}_{-1.4}$	$31.1^{+14.7}_{-13.4}$	$3.4^{+8.8}_{-3.2}$	$1.1^{+1.4}_{-0.7}$	$4.8^{+166.0}_{-122.5}$	0.2/0.73/0.07
GW190805_211137	Uninformative Prior	$5.2^{+15.3}_{-4.4}$	$98.0^{+454.5}_{-74.7}$	$2.4^{+8.6}_{-2.2}$	$16.8^{+105.7}_{-15.3}$	$76.3^{+684.0}_{-168.2}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$2.3^{+3.9}_{-1.7}$	$60.4^{+32.1}_{-28.8}$	$4.1^{+9.6}_{-3.8}$	$2.7^{+3.8}_{-1.7}$	$14.3^{+336.5}_{-296.5}$	0.19/0.72/0.09
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.0^{+2.3}_{-1.4}$	$70.6^{+33.9}_{-31.8}$	$4.7^{+10.5}_{-4.4}$	$2.5^{+2.0}_{-1.4}$	$-1.2^{+448.0}_{-420.1}$	0.24/0.6/0.16
	Posterior	$2.1^{+2.6}_{-1.4}$	$71.4^{+33.4}_{-31.7}$	$4.8^{+10.6}_{-4.4}$	$2.5^{+1.8}_{-1.4}$	$-1.0^{+359.4}_{-335.4}$	0.29/0.57/0.14
GW190814	Uninformative Prior	$2.1^{+8.6}_{-1.7}$	$9.1^{+25.4}_{-8.2}$	$2.4^{+7.6}_{-2.2}$	$0.8^{+1.2}_{-0.7}$	$3.1^{+79.5}_{-53.4}$	0.11/0.85/0.05
	Conditioned on $m_{1,2}$	$5.7^{+11.2}_{-5.1}$	$1.0^{+0.7}_{-0.5}$	$0.8^{+1.2}_{-0.7}$	$0.5^{+0.1}_{-0.1}$	$0.7^{+5.5}_{-0.6}$	0.0/0.99/0.0
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$3.0^{+7.0}_{-2.8}$	$0.8^{+0.7}_{-0.1}$	$0.8^{+1.2}_{-0.7}$	$0.5^{+-0.0}_{-0.1}$	$1.1^{+16.1}_{-1.1}$	0.0/1.0/0.0
	Posterior	$0.4^{+0.8}_{-0.3}$	$0.8^{+4.6}_{-0.1}$	$0.8^{+1.1}_{-0.7}$	$0.5^{+-0.0}_{-0.1}$	$7.3^{+61.0}_{-51.0}$	0.0/1.0/0.0

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW190828_063405	Uninformative Prior	$2.4^{+7.1}_{-1.9}$	$16.9^{+18.0}_{-9.7}$	$3.2^{+7.5}_{-3.0}$	$1.5^{+2.5}_{-1.2}$	$11.5^{+136.0}_{-95.8}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$1.7^{+2.2}_{-1.2}$	$21.6^{+6.1}_{-6.0}$	$3.0^{+8.4}_{-2.8}$	$0.6^{+0.6}_{-0.4}$	$0.9^{+81.9}_{-66.4}$	0.26/0.63/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+1.6}_{-1.1}$	$23.5^{+5.8}_{-6.2}$	$3.1^{+8.7}_{-2.9}$	$0.6^{+0.4}_{-0.4}$	$-1.0^{+89.1}_{-85.7}$	0.27/0.62/0.11
	Posterior	$1.4^{+1.4}_{-1.0}$	$23.4^{+5.4}_{-5.9}$	$2.8^{+8.0}_{-2.6}$	$0.5^{+0.4}_{-0.3}$	$-1.0^{+82.9}_{-87.7}$	0.24/0.64/0.12
GW190828_065509	Uninformative Prior	$2.2^{+7.9}_{-1.8}$	$8.0^{+8.9}_{-4.7}$	$2.5^{+6.8}_{-2.3}$	$0.8^{+1.5}_{-0.6}$	$5.6^{+71.6}_{-43.5}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$2.0^{+3.9}_{-1.6}$	$5.4^{+4.5}_{-1.7}$	$3.2^{+5.8}_{-2.9}$	$0.5^{+0.6}_{-0.3}$	$6.0^{+52.1}_{-46.6}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+3.3}_{-1.3}$	$5.6^{+4.8}_{-1.0}$	$3.0^{+5.9}_{-2.8}$	$0.5^{+0.4}_{-0.4}$	$6.1^{+64.8}_{-56.5}$	0.03/0.96/0.01
	Posterior	$1.3^{+2.8}_{-1.0}$	$5.5^{+5.0}_{-1.0}$	$2.5^{+5.3}_{-2.3}$	$0.5^{+0.4}_{-0.4}$	$6.1^{+71.3}_{-63.0}$	0.02/0.97/0.01
GW190910_112807	Uninformative Prior	$2.3^{+5.6}_{-1.8}$	$30.5^{+30.8}_{-16.5}$	$3.7^{+8.7}_{-3.4}$	$2.1^{+3.1}_{-1.6}$	$17.1^{+245.2}_{-178.6}$	0.12/0.83/0.05
	Conditioned on $m_{1,2}$	$1.9^{+2.3}_{-1.4}$	$33.5^{+10.3}_{-10.1}$	$3.1^{+8.8}_{-2.9}$	$1.0^{+0.9}_{-0.6}$	$1.6^{+129.3}_{-103.8}$	0.26/0.63/0.12
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.7^{+2.2}_{-1.3}$	$34.3^{+10.8}_{-10.0}$	$3.0^{+9.0}_{-2.8}$	$0.9^{+0.8}_{-0.6}$	$0.4^{+129.9}_{-110.5}$	0.26/0.66/0.09
	Posterior	$1.5^{+1.7}_{-1.2}$	$34.4^{+9.7}_{-10.1}$	$2.8^{+8.7}_{-2.6}$	$0.8^{+0.8}_{-0.5}$	$0.4^{+129.5}_{-117.8}$	0.19/0.7/0.11
GW190915_235702	Uninformative Prior	$2.3^{+6.6}_{-1.8}$	$15.7^{+15.0}_{-8.7}$	$3.0^{+7.5}_{-2.7}$	$1.3^{+2.1}_{-1.0}$	$10.2^{+113.0}_{-86.4}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$1.8^{+2.7}_{-1.3}$	$19.2^{+8.4}_{-6.7}$	$3.6^{+8.5}_{-3.3}$	$0.8^{+1.0}_{-0.5}$	$5.2^{+122.8}_{-103.9}$	0.17/0.76/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.7^{+2.6}_{-1.3}$	$19.7^{+8.7}_{-7.2}$	$3.5^{+8.5}_{-3.3}$	$0.7^{+1.0}_{-0.4}$	$3.9^{+128.2}_{-106.8}$	0.16/0.78/0.06
	Posterior	$2.2^{+2.7}_{-1.6}$	$19.9^{+7.2}_{-7.3}$	$3.8^{+8.8}_{-3.5}$	$0.8^{+0.9}_{-0.5}$	$5.1^{+82.6}_{-60.7}$	0.18/0.76/0.06
GW190916_200658	Uninformative Prior	$5.9^{+15.4}_{-5.0}$	$308.8^{+2175.0}_{-273.4}$	$2.9^{+10.0}_{-2.7}$	$44.9^{+403.5}_{-41.8}$	$226.9^{+2417.7}_{-486.2}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$	$2.4^{+5.6}_{-1.9}$	$37.4^{+36.8}_{-20.5}$	$3.8^{+9.1}_{-3.5}$	$2.5^{+4.0}_{-1.8}$	$19.5^{+302.6}_{-203.6}$	0.13/0.81/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.2^{+3.8}_{-1.7}$	$42.8^{+42.7}_{-24.5}$	$4.1^{+9.6}_{-3.8}$	$2.3^{+2.7}_{-1.6}$	$14.4^{+335.1}_{-269.4}$	0.15/0.77/0.08
	Posterior	$1.8^{+3.2}_{-1.3}$	$43.1^{+41.7}_{-25.4}$	$4.0^{+9.4}_{-3.7}$	$2.3^{+2.5}_{-1.6}$	$15.7^{+416.5}_{-312.3}$	0.13/0.79/0.08
GW190917_114630	Uninformative Prior	$2.4^{+12.2}_{-2.1}$	$0.5^{+0.6}_{-0.2}$	$0.9^{+3.9}_{-0.8}$	$0.1^{+0.4}_{-0.1}$	$0.4^{+3.8}_{-1.1}$	0.02/0.97/0.01
	Conditioned on $m_{1,2}$	$2.3^{+5.8}_{-2.0}$	$0.4^{+0.3}_{-0.1}$	$1.2^{+2.7}_{-1.1}$	$0.1^{+0.1}_{-0.1}$	$0.5^{+4.1}_{-0.6}$	0.01/0.99/0.0
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.2^{+4.3}_{-1.9}$	$0.4^{+0.3}_{-0.1}$	$1.2^{+2.3}_{-1.1}$	$0.1^{+0.1}_{-0.1}$	$0.5^{+4.7}_{-0.5}$	0.01/0.99/0.0
	Posterior	$1.2^{+3.1}_{-1.0}$	$0.4^{+1.0}_{-0.1}$	$1.2^{+2.3}_{-1.1}$	$0.1^{+0.1}_{-0.1}$	$0.9^{+8.4}_{-2.7}$	0.0/0.99/0.0
GW190924_021846	Uninformative Prior	$2.5^{+12.6}_{-2.2}$	$1.0^{+1.1}_{-0.4}$	$1.1^{+4.3}_{-1.0}$	$0.2^{+0.7}_{-0.2}$	$0.8^{+7.8}_{-2.6}$	0.02/0.96/0.01
	Conditioned on $m_{1,2}$	$1.2^{+3.0}_{-0.9}$	$1.0^{+0.6}_{-0.2}$	$2.2^{+5.0}_{-2.0}$	$0.1^{+0.2}_{-0.1}$	$0.7^{+8.6}_{-6.7}$	0.06/0.91/0.03
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.1^{+2.6}_{-0.9}$	$1.0^{+0.7}_{-0.1}$	$2.0^{+5.1}_{-1.9}$	$0.1^{+0.1}_{-0.1}$	$0.7^{+9.1}_{-7.3}$	0.05/0.93/0.02
	Posterior	$0.7^{+1.6}_{-0.6}$	$1.0^{+0.7}_{-0.1}$	$1.6^{+3.9}_{-1.5}$	$0.1^{+0.1}_{-0.1}$	$0.7^{+12.2}_{-9.7}$	0.03/0.96/0.02
GW190925_232845	Uninformative Prior	$3.6^{+14.3}_{-3.1}$	$7.5^{+16.3}_{-4.5}$	$1.6^{+5.9}_{-1.5}$	$1.6^{+6.3}_{-1.5}$	$6.0^{+55.8}_{-14.4}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$	$1.4^{+2.1}_{-1.0}$	$6.9^{+2.4}_{-1.7}$	$3.0^{+7.1}_{-2.8}$	$0.2^{+0.4}_{-0.1}$	$1.3^{+41.0}_{-33.0}$	0.17/0.76/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+1.9}_{-1.0}$	$7.2^{+2.3}_{-1.5}$	$2.9^{+7.6}_{-2.7}$	$0.2^{+0.4}_{-0.1}$	$0.7^{+42.6}_{-36.0}$	0.16/0.78/0.06
	Posterior	$1.2^{+1.6}_{-0.9}$	$7.2^{+2.3}_{-1.5}$	$2.7^{+7.1}_{-2.5}$	$0.2^{+0.3}_{-0.1}$	$0.7^{+50.8}_{-38.3}$	0.12/0.81/0.07
GW190926_050336	Uninformative Prior	$5.3^{+15.3}_{-4.5}$	$132.2^{+722.5}_{-111.7}$	$2.5^{+8.9}_{-2.3}$	$20.7^{+156.7}_{-19.1}$	$99.2^{+977.0}_{-217.3}$	0.07/0.89/0.04
	Conditioned on $m_{1,2}$	$2.4^{+5.3}_{-1.9}$	$23.9^{+28.0}_{-12.4}$	$3.7^{+8.3}_{-3.4}$	$1.8^{+2.9}_{-1.2}$	$16.4^{+214.8}_{-161.6}$	0.1/0.86/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.3^{+5.2}_{-1.8}$	$24.0^{+28.6}_{-12.9}$	$3.6^{+8.3}_{-3.3}$	$1.9^{+2.6}_{-1.3}$	$16.5^{+231.9}_{-176.8}$	0.09/0.87/0.04
	Posterior	$2.2^{+5.2}_{-1.8}$	$24.5^{+28.1}_{-13.5}$	$3.5^{+8.3}_{-3.2}$	$1.9^{+2.6}_{-1.3}$	$16.7^{+218.1}_{-170.4}$	0.09/0.87/0.04

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW190929_012149	Uninformative Prior	$3.4^{+10.9}_{-2.8}$	$62.9^{+93.4}_{-48.1}$	$3.4^{+8.9}_{-3.1}$	$6.6^{+13.3}_{-5.6}$	$36.9^{+485.6}_{-298.1}$	0.1/0.86/0.05
	Conditioned on $m_{1,2}$	$3.9^{+10.1}_{-3.3}$	$43.0^{+51.5}_{-25.6}$	$3.2^{+8.1}_{-2.9}$	$6.1^{+6.7}_{-4.1}$	$38.0^{+409.7}_{-198.6}$	0.06/0.91/0.03
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$3.7^{+7.8}_{-3.1}$	$43.3^{+58.0}_{-27.2}$	$3.2^{+8.3}_{-2.9}$	$6.4^{+3.9}_{-4.5}$	$36.9^{+394.4}_{-208.3}$	0.06/0.91/0.03
	Posterior	$6.0^{+5.5}_{-5.0}$	$47.8^{+51.8}_{-31.5}$	$3.2^{+8.0}_{-2.9}$	$6.5^{+4.2}_{-4.5}$	$29.5^{+183.8}_{-72.4}$	0.07/0.89/0.03
GW190930_133541	Uninformative Prior	$3.0^{+13.0}_{-2.6}$	$2.0^{+2.8}_{-0.9}$	$1.3^{+4.6}_{-1.2}$	$0.5^{+1.3}_{-0.4}$	$1.7^{+14.9}_{-4.4}$	0.03/0.96/0.01
	Conditioned on $m_{1,2}$	$1.3^{+3.7}_{-1.0}$	$2.2^{+1.0}_{-0.6}$	$2.5^{+5.8}_{-2.3}$	$0.1^{+0.5}_{-0.1}$	$1.1^{+15.5}_{-12.0}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+2.6}_{-1.0}$	$2.3^{+1.1}_{-0.4}$	$2.5^{+6.1}_{-2.3}$	$0.1^{+0.4}_{-0.1}$	$1.0^{+15.4}_{-12.3}$	0.09/0.88/0.03
	Posterior	$1.0^{+1.8}_{-0.7}$	$2.3^{+1.0}_{-0.4}$	$2.2^{+5.5}_{-2.0}$	$0.1^{+0.4}_{-0.1}$	$1.3^{+18.7}_{-14.8}$	0.06/0.91/0.03
GW191103_012549	Uninformative Prior	$2.8^{+13.1}_{-2.4}$	$1.8^{+2.9}_{-1.0}$	$1.2^{+4.8}_{-1.1}$	$0.4^{+1.5}_{-0.4}$	$1.4^{+13.9}_{-3.7}$	0.03/0.95/0.01
	Conditioned on $m_{1,2}$	$1.3^{+2.3}_{-1.0}$	$2.3^{+0.9}_{-0.6}$	$2.6^{+5.8}_{-2.4}$	$0.1^{+0.2}_{-0.1}$	$0.9^{+16.5}_{-12.6}$	0.11/0.84/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+1.8}_{-0.9}$	$2.4^{+0.8}_{-0.4}$	$3.0^{+6.2}_{-2.8}$	$0.1^{+0.2}_{-0.1}$	$0.8^{+17.4}_{-12.8}$	0.11/0.84/0.05
	Posterior	$1.1^{+1.5}_{-0.8}$	$2.4^{+0.8}_{-0.4}$	$2.6^{+5.5}_{-2.4}$	$0.1^{+0.2}_{-0.1}$	$0.9^{+18.5}_{-14.1}$	0.08/0.86/0.06
GW191105_143521	Uninformative Prior	$2.9^{+13.3}_{-2.5}$	$2.3^{+3.7}_{-1.3}$	$1.3^{+4.9}_{-1.2}$	$0.5^{+1.8}_{-0.5}$	$1.8^{+17.1}_{-4.7}$	0.03/0.95/0.02
	Conditioned on $m_{1,2}$	$1.2^{+1.8}_{-0.9}$	$2.1^{+0.8}_{-0.4}$	$2.6^{+5.9}_{-2.4}$	$0.1^{+0.1}_{-0.1}$	$0.7^{+13.0}_{-12.2}$	0.13/0.82/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.1^{+1.7}_{-0.9}$	$2.2^{+0.8}_{-0.4}$	$2.2^{+6.2}_{-2.1}$	$0.1^{+0.1}_{-0.1}$	$0.6^{+14.5}_{-12.8}$	0.11/0.85/0.04
	Posterior	$0.8^{+1.3}_{-0.7}$	$2.2^{+0.9}_{-0.4}$	$1.8^{+5.4}_{-1.7}$	$0.1^{+0.1}_{-0.1}$	$0.5^{+18.9}_{-14.6}$	0.07/0.9/0.04
GW191109_010717	Uninformative Prior	$5.1^{+15.3}_{-4.4}$	$90.3^{+413.8}_{-70.3}$	$2.4^{+8.5}_{-2.2}$	$15.4^{+97.7}_{-14.1}$	$69.9^{+636.4}_{-156.5}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$2.2^{+3.0}_{-1.6}$	$58.7^{+26.2}_{-24.9}$	$4.1^{+9.8}_{-3.8}$	$2.2^{+2.0}_{-1.2}$	$9.3^{+293.7}_{-249.8}$	0.22/0.69/0.09
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$3.0^{+3.6}_{-2.2}$	$48.0^{+36.2}_{-25.4}$	$4.0^{+7.7}_{-3.7}$	$2.9^{+2.1}_{-1.8}$	$22.9^{+190.1}_{-93.5}$	0.21/0.7/0.09
	Posterior	$4.1^{+2.9}_{-2.7}$	$48.9^{+40.0}_{-27.2}$	$4.5^{+8.8}_{-4.1}$	$3.4^{+1.7}_{-1.9}$	$18.3^{+162.5}_{-205.9}$	0.27/0.66/0.06
GW191113_071753	Uninformative Prior	$5.1^{+16.4}_{-4.6}$	$5.0^{+26.9}_{-3.1}$	$0.9^{+5.2}_{-0.8}$	$1.8^{+9.8}_{-1.7}$	$3.4^{+24.9}_{-4.7}$	0.03/0.95/0.02
	Conditioned on $m_{1,2}$	$3.3^{+9.3}_{-2.9}$	$3.5^{+3.2}_{-1.6}$	$1.7^{+4.2}_{-1.5}$	$0.8^{+0.9}_{-0.6}$	$3.5^{+30.2}_{-5.7}$	0.02/0.97/0.01
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.8^{+5.6}_{-2.5}$	$3.3^{+5.1}_{-1.0}$	$1.7^{+4.2}_{-1.6}$	$0.9^{+0.5}_{-0.7}$	$4.0^{+36.9}_{-9.0}$	0.02/0.97/0.01
	Posterior	$1.8^{+4.7}_{-1.5}$	$3.1^{+6.1}_{-0.9}$	$1.8^{+3.8}_{-1.6}$	$0.9^{+0.5}_{-0.7}$	$5.8^{+52.6}_{-16.9}$	0.01/0.98/0.01
GW191126_115259	Uninformative Prior	$3.3^{+13.9}_{-2.9}$	$4.6^{+9.7}_{-3.1}$	$1.4^{+5.6}_{-1.3}$	$1.0^{+4.1}_{-0.9}$	$3.5^{+35.7}_{-8.7}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$	$1.3^{+2.2}_{-1.0}$	$2.8^{+1.2}_{-0.7}$	$2.7^{+6.0}_{-2.5}$	$0.1^{+0.3}_{-0.1}$	$1.1^{+19.3}_{-15.5}$	0.11/0.84/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+1.7}_{-0.9}$	$3.0^{+1.0}_{-0.5}$	$3.0^{+6.6}_{-2.8}$	$0.1^{+0.2}_{-0.1}$	$0.8^{+20.0}_{-16.0}$	0.12/0.83/0.05
	Posterior	$1.0^{+1.5}_{-0.7}$	$3.0^{+1.1}_{-0.5}$	$2.7^{+5.9}_{-2.5}$	$0.1^{+0.2}_{-0.1}$	$0.8^{+26.5}_{-19.9}$	0.09/0.86/0.06
GW191127_050227	Uninformative Prior	$5.2^{+15.3}_{-4.4}$	$117.7^{+624.2}_{-102.2}$	$2.5^{+8.7}_{-2.3}$	$18.3^{+139.3}_{-17.0}$	$86.1^{+873.3}_{-183.8}$	0.07/0.89/0.04
	Conditioned on $m_{1,2}$	$2.8^{+9.4}_{-2.2}$	$37.4^{+48.8}_{-24.0}$	$3.3^{+8.7}_{-3.1}$	$3.2^{+8.8}_{-2.5}$	$20.3^{+269.3}_{-183.5}$	0.12/0.84/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.4^{+6.4}_{-1.8}$	$43.1^{+54.9}_{-29.9}$	$3.4^{+9.8}_{-3.2}$	$2.9^{+7.0}_{-2.3}$	$17.8^{+327.2}_{-230.9}$	0.12/0.81/0.07
	Posterior	$2.9^{+8.1}_{-2.2}$	$45.6^{+54.4}_{-31.9}$	$3.5^{+9.6}_{-3.2}$	$3.0^{+7.2}_{-2.3}$	$16.1^{+270.0}_{-192.1}$	0.15/0.78/0.07
GW191129_134029	Uninformative Prior	$2.8^{+13.0}_{-2.4}$	$1.7^{+2.6}_{-0.8}$	$1.2^{+4.7}_{-1.1}$	$0.4^{+1.3}_{-0.4}$	$1.4^{+12.9}_{-3.7}$	0.03/0.95/0.01
	Conditioned on $m_{1,2}$	$1.2^{+2.1}_{-0.9}$	$1.7^{+0.8}_{-0.4}$	$2.6^{+5.5}_{-2.4}$	$0.1^{+0.1}_{-0.1}$	$0.9^{+13.4}_{-10.8}$	0.08/0.88/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.1^{+1.9}_{-0.9}$	$1.7^{+0.9}_{-0.2}$	$2.4^{+5.8}_{-2.2}$	$0.1^{+0.1}_{-0.1}$	$0.8^{+13.8}_{-11.7}$	0.07/0.9/0.03
	Posterior	$0.7^{+1.2}_{-0.5}$	$1.7^{+0.9}_{-0.2}$	$1.9^{+4.5}_{-1.7}$	$0.1^{+0.1}_{-0.1}$	$0.9^{+18.5}_{-15.5}$	0.04/0.94/0.02

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW191204_110529	Uninformative Prior	$4.1^{+14.8}_{-3.5}$	$19.0^{+55.4}_{-13.6}$	$1.9^{+6.8}_{-1.8}$	$3.6^{+17.7}_{-3.3}$	$14.5^{+131.8}_{-35.0}$	0.05/0.92/0.02
	Conditioned on $m_{1,2}$	$1.7^{+2.7}_{-1.3}$	$13.2^{+5.5}_{-4.2}$	$3.2^{+8.0}_{-3.0}$	$0.5^{+1.0}_{-0.3}$	$2.8^{+78.2}_{-64.2}$	0.17/0.76/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+2.4}_{-1.2}$	$13.6^{+5.9}_{-4.2}$	$3.2^{+8.1}_{-3.0}$	$0.4^{+0.9}_{-0.3}$	$2.2^{+81.3}_{-66.7}$	0.17/0.77/0.06
	Posterior	$1.9^{+2.5}_{-1.4}$	$13.7^{+5.4}_{-4.3}$	$3.3^{+8.5}_{-3.1}$	$0.5^{+0.8}_{-0.3}$	$2.0^{+70.6}_{-49.2}$	0.22/0.72/0.06
GW191204_171526	Uninformative Prior	$2.9^{+13.3}_{-2.5}$	$2.1^{+2.9}_{-0.8}$	$1.3^{+4.8}_{-1.2}$	$0.5^{+1.5}_{-0.5}$	$1.7^{+15.0}_{-4.5}$	0.03/0.95/0.02
	Conditioned on $m_{1,2}$	$1.2^{+1.7}_{-0.9}$	$2.2^{+0.8}_{-0.5}$	$2.8^{+5.9}_{-2.6}$	$0.1^{+0.1}_{-0.1}$	$0.9^{+15.7}_{-12.6}$	0.11/0.85/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.1^{+1.5}_{-0.7}$	$2.3^{+0.8}_{-0.4}$	$2.9^{+6.3}_{-2.7}$	$0.1^{+0.1}_{-0.1}$	$0.6^{+16.3}_{-14.0}$	0.11/0.85/0.04
	Posterior	$1.0^{+1.2}_{-0.7}$	$2.2^{+0.9}_{-0.3}$	$2.7^{+5.4}_{-2.5}$	$0.1^{+0.1}_{-0.1}$	$1.0^{+18.6}_{-14.0}$	0.05/0.89/0.05
GW191215_223052	Uninformative Prior	$3.9^{+14.8}_{-3.4}$	$13.9^{+34.6}_{-8.5}$	$1.8^{+6.5}_{-1.7}$	$2.8^{+11.9}_{-2.5}$	$11.3^{+101.7}_{-26.3}$	0.05/0.93/0.02
	Conditioned on $m_{1,2}$	$1.6^{+2.3}_{-1.2}$	$11.5^{+4.3}_{-3.1}$	$3.3^{+7.9}_{-3.1}$	$0.4^{+0.6}_{-0.3}$	$2.6^{+72.2}_{-52.8}$	0.17/0.75/0.08
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.5^{+2.2}_{-1.2}$	$11.5^{+4.6}_{-2.9}$	$3.1^{+8.0}_{-2.9}$	$0.4^{+0.6}_{-0.3}$	$2.5^{+73.1}_{-62.5}$	0.16/0.79/0.06
	Posterior	$1.8^{+2.5}_{-1.4}$	$11.4^{+4.2}_{-2.5}$	$3.1^{+7.9}_{-2.9}$	$0.4^{+0.6}_{-0.3}$	$2.7^{+48.3}_{-40.9}$	0.17/0.78/0.05
GW191216_213338	Uninformative Prior	$2.8^{+13.1}_{-2.4}$	$1.9^{+2.8}_{-0.9}$	$1.2^{+4.8}_{-1.1}$	$0.4^{+1.5}_{-0.4}$	$1.5^{+13.9}_{-4.0}$	0.03/0.95/0.02
	Conditioned on $m_{1,2}$	$1.2^{+2.1}_{-0.9}$	$1.8^{+0.9}_{-0.4}$	$2.6^{+5.7}_{-2.4}$	$0.1^{+0.1}_{-0.1}$	$1.0^{+14.3}_{-12.1}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.1^{+1.9}_{-0.8}$	$1.9^{+0.9}_{-0.3}$	$2.6^{+6.0}_{-2.4}$	$0.1^{+0.1}_{-0.1}$	$0.8^{+14.3}_{-12.5}$	0.08/0.89/0.03
	Posterior	$0.6^{+1.0}_{-0.4}$	$1.9^{+1.0}_{-0.2}$	$1.8^{+4.4}_{-1.6}$	$0.1^{+0.1}_{-0.1}$	$0.6^{+23.1}_{-22.0}$	0.03/0.94/0.02
GW191222_033537	Uninformative Prior	$5.0^{+15.2}_{-4.3}$	$69.2^{+281.0}_{-50.2}$	$2.3^{+8.2}_{-2.1}$	$12.4^{+70.7}_{-11.3}$	$55.2^{+487.8}_{-124.0}$	0.06/0.91/0.03
	Conditioned on $m_{1,2}$	$2.0^{+2.9}_{-1.4}$	$43.3^{+17.5}_{-16.0}$	$3.4^{+9.2}_{-3.2}$	$1.4^{+1.8}_{-0.8}$	$3.7^{+190.8}_{-151.0}$	0.24/0.65/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.0^{+2.7}_{-1.5}$	$42.9^{+18.4}_{-16.3}$	$3.2^{+9.1}_{-3.0}$	$1.4^{+1.7}_{-0.9}$	$4.0^{+181.3}_{-150.2}$	0.23/0.69/0.08
	Posterior	$1.8^{+2.7}_{-1.4}$	$42.8^{+18.5}_{-16.9}$	$3.1^{+9.2}_{-2.9}$	$1.3^{+1.9}_{-0.8}$	$4.4^{+197.2}_{-176.9}$	0.19/0.72/0.09
GW191230_180458	Uninformative Prior	$5.2^{+15.3}_{-4.4}$	$106.1^{+528.8}_{-86.9}$	$2.5^{+8.6}_{-2.3}$	$17.2^{+120.1}_{-15.7}$	$80.4^{+779.0}_{-176.8}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$2.2^{+3.3}_{-1.7}$	$61.3^{+27.7}_{-25.4}$	$3.5^{+9.5}_{-3.3}$	$2.3^{+2.8}_{-1.5}$	$6.4^{+264.6}_{-236.8}$	0.24/0.65/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.3^{+3.2}_{-1.8}$	$60.5^{+30.4}_{-27.9}$	$3.4^{+9.6}_{-3.2}$	$2.3^{+2.7}_{-1.5}$	$8.5^{+258.2}_{-202.3}$	0.24/0.68/0.09
	Posterior	$2.5^{+3.6}_{-1.9}$	$61.3^{+28.5}_{-27.6}$	$3.6^{+9.8}_{-3.4}$	$2.3^{+2.7}_{-1.5}$	$8.1^{+187.5}_{-153.3}$	0.27/0.64/0.08
GW200112_155838	Uninformative Prior	$4.3^{+14.9}_{-3.7}$	$26.6^{+80.2}_{-17.6}$	$2.0^{+7.2}_{-1.8}$	$5.1^{+24.1}_{-4.6}$	$21.2^{+183.4}_{-48.7}$	0.05/0.92/0.03
	Conditioned on $m_{1,2}$	$1.8^{+2.2}_{-1.3}$	$20.9^{+6.3}_{-6.0}$	$3.1^{+8.3}_{-2.9}$	$0.6^{+0.7}_{-0.4}$	$1.7^{+93.6}_{-70.6}$	0.25/0.66/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+1.9}_{-1.2}$	$21.7^{+6.4}_{-5.7}$	$2.9^{+9.1}_{-2.7}$	$0.6^{+0.6}_{-0.4}$	$0.2^{+102.8}_{-83.5}$	0.22/0.7/0.08
	Posterior	$1.3^{+1.6}_{-1.0}$	$21.6^{+6.3}_{-5.8}$	$2.9^{+8.5}_{-2.7}$	$0.5^{+0.7}_{-0.3}$	$0.3^{+125.4}_{-102.3}$	0.15/0.75/0.1
GW200128_022011	Uninformative Prior	$4.8^{+15.3}_{-4.1}$	$55.9^{+208.5}_{-39.0}$	$2.2^{+8.0}_{-2.0}$	$10.3^{+54.8}_{-9.3}$	$45.6^{+394.4}_{-100.4}$	0.06/0.91/0.03
	Conditioned on $m_{1,2}$	$2.0^{+2.6}_{-1.5}$	$41.6^{+17.3}_{-14.8}$	$3.3^{+9.4}_{-3.1}$	$1.4^{+1.6}_{-0.9}$	$3.3^{+194.4}_{-153.1}$	0.24/0.65/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+2.2}_{-1.3}$	$44.6^{+19.3}_{-16.6}$	$3.4^{+9.7}_{-3.2}$	$1.3^{+1.4}_{-0.8}$	$-0.2^{+186.6}_{-188.1}$	0.25/0.64/0.1
	Posterior	$2.3^{+2.2}_{-1.7}$	$44.6^{+19.1}_{-15.9}$	$3.6^{+10.3}_{-3.4}$	$1.3^{+1.3}_{-0.8}$	$0.0^{+148.7}_{-115.1}$	0.35/0.56/0.09
GW200129_065458	Uninformative Prior	$4.2^{+14.9}_{-3.6}$	$23.9^{+75.9}_{-18.0}$	$1.9^{+7.0}_{-1.8}$	$4.4^{+23.1}_{-4.0}$	$18.0^{+168.1}_{-42.7}$	0.05/0.92/0.03
	Conditioned on $m_{1,2}$	$1.7^{+2.6}_{-1.3}$	$18.8^{+5.0}_{-6.3}$	$2.6^{+8.0}_{-2.4}$	$0.5^{+1.0}_{-0.3}$	$1.1^{+68.2}_{-43.5}$	0.27/0.63/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.5^{+2.2}_{-1.1}$	$20.1^{+4.6}_{-6.5}$	$2.5^{+8.0}_{-2.3}$	$0.5^{+0.9}_{-0.3}$	$-0.2^{+72.7}_{-81.7}$	0.25/0.63/0.12
	Posterior	$1.5^{+3.7}_{-1.1}$	$19.5^{+3.9}_{-5.2}$	$3.6^{+8.6}_{-3.4}$	$0.5^{+0.9}_{-0.3}$	$0.2^{+63.9}_{-53.0}$	0.17/0.7/0.12

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW200202_154313	Uninformative Prior	$2.8^{+12.8}_{-2.4}$	$1.6^{+2.3}_{-0.8}$	$1.2^{+4.6}_{-1.1}$	$0.4^{+1.2}_{-0.4}$	$1.3^{+12.1}_{-3.4}$	0.03/0.95/0.01
	Conditioned on $m_{1,2}$	$1.1^{+1.7}_{-0.8}$	$1.6^{+0.6}_{-0.3}$	$2.5^{+5.6}_{-2.3}$	$0.1^{+0.1}_{-0.1}$	$0.5^{+10.6}_{-8.9}$	0.12/0.83/0.05
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.0^{+1.6}_{-0.8}$	$1.7^{+0.6}_{-0.3}$	$2.2^{+6.0}_{-2.1}$	$0.1^{+0.0}_{-0.1}$	$0.4^{+11.3}_{-9.0}$	0.11/0.86/0.04
	Posterior	$0.7^{+1.1}_{-0.6}$	$1.7^{+0.7}_{-0.3}$	$1.7^{+4.9}_{-1.6}$	$0.1^{+0.0}_{-0.1}$	$0.2^{+13.6}_{-13.0}$	0.06/0.91/0.03
GW200208_130117	Uninformative Prior	$4.4^{+15.0}_{-3.8}$	$31.4^{+99.1}_{-20.9}$	$2.0^{+7.4}_{-1.8}$	$6.0^{+28.9}_{-5.4}$	$25.2^{+214.7}_{-58.4}$	0.06/0.92/0.03
	Conditioned on $m_{1,2}$	$1.9^{+2.7}_{-1.4}$	$26.1^{+11.2}_{-9.6}$	$3.6^{+8.8}_{-3.4}$	$1.0^{+1.2}_{-0.6}$	$4.6^{+137.6}_{-123.0}$	0.19/0.73/0.08
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.9^{+2.9}_{-1.4}$	$25.5^{+12.8}_{-10.3}$	$3.4^{+8.6}_{-3.2}$	$1.0^{+1.2}_{-0.7}$	$5.6^{+140.5}_{-117.7}$	0.19/0.74/0.07
	Posterior	$1.6^{+2.5}_{-1.2}$	$25.5^{+12.9}_{-10.5}$	$3.2^{+8.2}_{-3.0}$	$0.9^{+1.2}_{-0.6}$	$5.6^{+165.0}_{-131.1}$	0.14/0.79/0.07
GW200208_222617	Uninformative Prior	$5.6^{+15.3}_{-4.8}$	$188.5^{+1187.7}_{-166.5}$	$2.7^{+9.2}_{-2.5}$	$28.1^{+240.8}_{-26.2}$	$137.8^{+1390.5}_{-304.0}$	0.08/0.88/0.04
	Conditioned on $m_{1,2}$	$3.6^{+14.9}_{-3.0}$	$19.0^{+82.6}_{-10.8}$	$2.2^{+6.8}_{-2.0}$	$3.8^{+26.8}_{-3.5}$	$18.1^{+184.3}_{-42.9}$	0.05/0.92/0.03
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.5^{+4.6}_{-1.8}$	$24.9^{+176.0}_{-14.7}$	$3.0^{+7.7}_{-2.7}$	$2.9^{+9.2}_{-2.6}$	$21.5^{+256.7}_{-70.0}$	0.08/0.87/0.05
	Posterior	$2.6^{+4.5}_{-1.9}$	$24.4^{+178.9}_{-14.3}$	$2.9^{+7.5}_{-2.6}$	$2.9^{+9.3}_{-2.6}$	$20.0^{+222.3}_{-62.3}$	0.08/0.87/0.04
GW200209_085452	Uninformative Prior	$5.0^{+15.2}_{-4.3}$	$77.5^{+346.1}_{-62.3}$	$2.3^{+8.4}_{-2.1}$	$13.0^{+83.9}_{-11.9}$	$58.4^{+545.8}_{-134.0}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$1.9^{+2.7}_{-1.4}$	$30.5^{+15.5}_{-12.5}$	$3.2^{+8.9}_{-3.0}$	$1.0^{+1.3}_{-0.6}$	$2.8^{+140.0}_{-112.2}$	0.24/0.65/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.0^{+2.9}_{-1.5}$	$29.1^{+16.6}_{-12.8}$	$3.2^{+8.7}_{-3.0}$	$1.0^{+1.4}_{-0.6}$	$5.5^{+138.6}_{-100.5}$	0.22/0.69/0.09
	Posterior	$2.3^{+3.1}_{-1.8}$	$29.3^{+16.2}_{-12.8}$	$3.2^{+8.4}_{-3.0}$	$1.1^{+1.3}_{-0.7}$	$5.3^{+98.4}_{-69.5}$	0.26/0.66/0.08
GW200210_092254	Uninformative Prior	$3.9^{+16.0}_{-3.5}$	$1.6^{+5.3}_{-0.7}$	$0.8^{+4.5}_{-0.7}$	$0.6^{+2.4}_{-0.6}$	$1.2^{+9.9}_{-2.1}$	0.02/0.96/0.01
	Conditioned on $m_{1,2}$	$5.7^{+11.9}_{-5.1}$	$1.4^{+1.3}_{-0.7}$	$0.9^{+1.4}_{-0.8}$	$0.6^{+0.4}_{-0.2}$	$1.1^{+8.2}_{-1.0}$	0.0/0.99/0.0
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$4.5^{+5.5}_{-4.2}$	$1.3^{+1.5}_{-0.4}$	$0.9^{+1.4}_{-0.8}$	$0.6^{+0.3}_{-0.1}$	$1.3^{+12.5}_{-1.2}$	0.0/0.99/0.0
	Posterior	$2.6^{+3.3}_{-2.3}$	$1.2^{+0.9}_{-0.3}$	$0.8^{+1.4}_{-0.7}$	$0.6^{+0.3}_{-0.1}$	$2.0^{+13.9}_{-1.9}$	0.0/1.0/0.0
GW200216_220804	Uninformative Prior	$5.1^{+15.2}_{-4.4}$	$88.4^{+417.5}_{-72.6}$	$2.4^{+8.4}_{-2.2}$	$14.4^{+98.3}_{-13.2}$	$66.6^{+618.9}_{-150.2}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$2.4^{+6.1}_{-1.8}$	$48.1^{+37.8}_{-30.5}$	$3.7^{+9.1}_{-3.4}$	$2.7^{+4.3}_{-1.8}$	$17.4^{+308.4}_{-224.8}$	0.15/0.78/0.07
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.3^{+4.7}_{-1.7}$	$51.9^{+41.0}_{-34.9}$	$3.8^{+9.6}_{-3.5}$	$2.7^{+3.2}_{-1.8}$	$13.3^{+327.9}_{-263.0}$	0.17/0.75/0.08
	Posterior	$2.3^{+4.9}_{-1.7}$	$52.1^{+40.7}_{-35.1}$	$3.7^{+9.6}_{-3.4}$	$2.7^{+3.1}_{-1.8}$	$13.0^{+371.3}_{-289.8}$	0.16/0.77/0.07
GW200219_094415	Uninformative Prior	$4.6^{+15.2}_{-3.9}$	$44.5^{+160.7}_{-32.6}$	$2.1^{+7.8}_{-1.9}$	$8.1^{+43.9}_{-7.4}$	$34.9^{+308.2}_{-79.4}$	0.06/0.91/0.03
	Conditioned on $m_{1,2}$	$2.0^{+2.7}_{-1.5}$	$32.7^{+13.6}_{-13.0}$	$3.4^{+9.0}_{-3.2}$	$1.1^{+1.5}_{-0.7}$	$3.9^{+144.0}_{-139.5}$	0.22/0.68/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.0^{+3.0}_{-1.5}$	$31.6^{+15.2}_{-13.2}$	$3.3^{+8.8}_{-3.1}$	$1.1^{+1.5}_{-0.7}$	$5.9^{+144.5}_{-111.3}$	0.21/0.71/0.07
	Posterior	$2.1^{+2.9}_{-1.6}$	$31.8^{+15.0}_{-13.8}$	$3.4^{+8.9}_{-3.2}$	$1.2^{+1.4}_{-0.8}$	$6.0^{+135.5}_{-104.7}$	0.21/0.71/0.08
GW200220_061928	Uninformative Prior	$6.9^{+15.6}_{-5.9}$	$415.4^{+3448.1}_{-341.3}$	$2.7^{+10.5}_{-2.5}$	$72.8^{+578.8}_{-67.3}$	$303.5^{+2656.2}_{-536.3}$	0.09/0.86/0.05
	Conditioned on $m_{1,2}$	$2.9^{+4.9}_{-2.2}$	$214.2^{+136.4}_{-109.7}$	$4.0^{+11.6}_{-3.7}$	$9.5^{+16.6}_{-5.9}$	$27.1^{+991.1}_{-824.3}$	0.25/0.64/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.7^{+4.2}_{-2.0}$	$226.6^{+163.3}_{-121.2}$	$4.1^{+11.7}_{-3.8}$	$9.4^{+11.9}_{-5.6}$	$13.1^{+1143.0}_{-1068.3}$	0.26/0.63/0.11
	Posterior	$2.9^{+4.6}_{-2.1}$	$228.0^{+171.1}_{-125.5}$	$4.4^{+12.0}_{-4.2}$	$9.9^{+11.2}_{-6.2}$	$18.0^{+938.0}_{-700.4}$	0.28/0.61/0.12
GW200220_124850	Uninformative Prior	$5.1^{+15.2}_{-4.4}$	$89.7^{+427.5}_{-74.1}$	$2.4^{+8.4}_{-2.2}$	$14.6^{+100.3}_{-13.4}$	$67.3^{+628.9}_{-151.5}$	0.07/0.9/0.03
	Conditioned on $m_{1,2}$	$2.1^{+3.2}_{-1.6}$	$37.1^{+17.0}_{-16.0}$	$3.6^{+9.0}_{-3.4}$	$1.4^{+1.9}_{-0.9}$	$6.3^{+181.4}_{-156.2}$	0.22/0.7/0.08
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.1^{+3.2}_{-1.6}$	$35.8^{+19.4}_{-16.5}$	$3.4^{+8.9}_{-3.2}$	$1.4^{+1.9}_{-0.9}$	$7.8^{+188.6}_{-163.9}$	0.2/0.73/0.07
	Posterior	$2.3^{+3.6}_{-1.8}$	$36.1^{+18.4}_{-16.7}$	$3.4^{+9.1}_{-3.2}$	$1.4^{+1.9}_{-0.9}$	$7.4^{+149.0}_{-116.1}$	0.21/0.72/0.07

(Table continued)

TABLE I. *(Continued)*

Event	Probability	$\langle\theta_L\rangle[\times10^{-1}]$	$M\langle\Omega_L\rangle[\times10^{-4}]$	$\Delta\theta_L[\times10^{-1}]$	$M\omega[\times10^{-4}]$	$M\Delta\Omega_L[\times10^{-4}]$	L0/C/Lπ
GW200224_222234	Uninformative Prior	$4.5^{+15.0}_{-3.9}$	$35.0^{+115.0}_{-24.1}$	$2.1^{+7.4}_{-1.9}$	$6.6^{+32.9}_{-6.0}$	$27.8^{+238.3}_{-65.8}$	0.06/0.92/0.03
	Conditioned on $m_{1,2}$	$1.8^{+2.4}_{-1.3}$	$29.4^{+8.6}_{-9.3}$	$3.1^{+8.7}_{-2.9}$	$0.8^{+1.0}_{-0.5}$	$1.5^{+112.9}_{-103.6}$	0.26/0.63/0.11
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.7^{+2.0}_{-1.3}$	$31.2^{+7.9}_{-9.7}$	$3.1^{+9.3}_{-2.9}$	$0.8^{+0.8}_{-0.5}$	$-0.3^{+117.7}_{-110.9}$	0.26/0.64/0.1
	Posterior	$1.7^{+1.9}_{-1.2}$	$31.1^{+7.2}_{-9.4}$	$3.2^{+9.2}_{-3.0}$	$0.8^{+0.7}_{-0.5}$	$-0.1^{+106.5}_{-90.8}$	0.25/0.64/0.11
GW200225_060421	Uninformative Prior	$3.5^{+14.3}_{-3.0}$	$6.8^{+14.4}_{-3.9}$	$1.6^{+5.8}_{-1.5}$	$1.5^{+5.6}_{-1.4}$	$5.5^{+51.3}_{-13.3}$	0.04/0.94/0.02
	Conditioned on $m_{1,2}$	$1.4^{+2.0}_{-1.0}$	$6.3^{+2.2}_{-2.0}$	$3.0^{+7.0}_{-2.8}$	$0.2^{+0.3}_{-0.1}$	$1.4^{+35.9}_{-29.1}$	0.16/0.78/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.5^{+2.2}_{-1.1}$	$6.1^{+2.4}_{-2.2}$	$3.0^{+6.7}_{-2.8}$	$0.2^{+0.3}_{-0.1}$	$2.1^{+34.3}_{-28.1}$	0.15/0.8/0.05
	Posterior	$1.9^{+2.1}_{-1.4}$	$6.0^{+1.9}_{-2.1}$	$2.8^{+6.6}_{-2.6}$	$0.2^{+0.3}_{-0.1}$	$2.2^{+21.6}_{-12.8}$	0.14/0.81/0.05
GW200302_015811	Uninformative Prior	$4.3^{+14.9}_{-3.7}$	$28.6^{+92.9}_{-21.1}$	$2.0^{+7.2}_{-1.8}$	$5.3^{+27.4}_{-4.8}$	$21.8^{+199.0}_{-51.1}$	0.05/0.92/0.03
	Conditioned on $m_{1,2}$	$2.0^{+3.7}_{-1.5}$	$15.3^{+12.0}_{-6.3}$	$3.9^{+7.6}_{-3.6}$	$1.0^{+1.0}_{-0.6}$	$11.3^{+137.5}_{-122.5}$	0.09/0.88/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+3.6}_{-1.4}$	$15.7^{+13.0}_{-6.7}$	$3.7^{+8.0}_{-3.4}$	$1.1^{+0.8}_{-0.7}$	$10.0^{+154.1}_{-127.6}$	0.08/0.89/0.03
	Posterior	$1.7^{+3.4}_{-1.3}$	$15.5^{+12.6}_{-6.6}$	$3.5^{+7.6}_{-3.2}$	$1.1^{+0.7}_{-0.7}$	$11.0^{+149.5}_{-125.3}$	0.07/0.9/0.03
GW200306_093714	Uninformative Prior	$6.0^{+16.1}_{-5.3}$	$45.2^{+376.1}_{-36.9}$	$1.5^{+7.4}_{-1.4}$	$10.9^{+95.5}_{-10.3}$	$31.6^{+251.0}_{-45.7}$	0.05/0.93/0.02
	Conditioned on $m_{1,2}$	$2.0^{+5.1}_{-1.5}$	$10.8^{+7.5}_{-5.3}$	$3.2^{+7.3}_{-2.9}$	$0.7^{+1.5}_{-0.5}$	$6.8^{+84.0}_{-64.1}$	0.09/0.87/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.8^{+3.5}_{-1.3}$	$12.7^{+7.1}_{-6.7}$	$3.7^{+8.0}_{-3.4}$	$0.6^{+1.2}_{-0.4}$	$6.3^{+98.7}_{-78.4}$	0.12/0.8/0.07
	Posterior	$1.7^{+3.5}_{-1.2}$	$12.6^{+6.9}_{-6.6}$	$3.6^{+7.7}_{-3.3}$	$0.6^{+1.2}_{-0.4}$	$6.3^{+96.5}_{-83.9}$	0.11/0.82/0.08
GW200308_173609	Uninformative Prior	$6.0^{+15.3}_{-5.0}$	$538.6^{+3027.8}_{-483.2}$	$3.4^{+11.0}_{-3.1}$	$70.2^{+520.6}_{-65.2}$	$370.1^{+4206.4}_{-1003.7}$	0.1/0.84/0.05
	Conditioned on $m_{1,2}$	$3.5^{+10.9}_{-2.8}$	$90.7^{+580.9}_{-77.0}$	$3.7^{+9.7}_{-3.4}$	$7.7^{+99.5}_{-6.3}$	$51.7^{+1100.7}_{-385.1}$	0.09/0.85/0.06
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.8^{+10.6}_{-2.1}$	$94.3^{+622.9}_{-75.3}$	$4.5^{+9.0}_{-4.1}$	$7.5^{+89.2}_{-6.4}$	$68.2^{+1332.2}_{-570.0}$	0.11/0.82/0.07
	Posterior	$3.0^{+10.2}_{-2.3}$	$98.7^{+645.9}_{-78.8}$	$4.4^{+9.8}_{-4.0}$	$7.3^{+88.7}_{-6.3}$	$49.2^{+1244.3}_{-469.2}$	0.1/0.84/0.06
GW200311_115853	Uninformative Prior	$4.3^{+14.9}_{-3.7}$	$24.9^{+72.9}_{-16.1}$	$1.9^{+7.2}_{-1.7}$	$4.8^{+22.4}_{-4.3}$	$19.9^{+176.6}_{-45.9}$	0.05/0.92/0.03
	Conditioned on $m_{1,2}$	$1.7^{+2.1}_{-1.3}$	$19.5^{+5.7}_{-5.7}$	$2.9^{+8.2}_{-2.7}$	$0.5^{+0.7}_{-0.3}$	$1.1^{+78.6}_{-64.1}$	0.24/0.65/0.1
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.6^{+2.2}_{-1.2}$	$19.5^{+5.9}_{-5.6}$	$2.8^{+8.4}_{-2.6}$	$0.5^{+0.7}_{-0.3}$	$1.0^{+79.2}_{-66.5}$	0.23/0.68/0.08
	Posterior	$1.6^{+2.1}_{-1.2}$	$19.4^{+5.5}_{-5.6}$	$2.9^{+8.4}_{-2.7}$	$0.5^{+0.6}_{-0.3}$	$1.5^{+75.9}_{-59.2}$	0.19/0.71/0.09
GW200316_215756	Uninformative Prior	$3.0^{+13.6}_{-2.6}$	$2.7^{+4.7}_{-1.4}$	$1.3^{+5.1}_{-1.2}$	$0.6^{+2.2}_{-0.5}$	$2.2^{+20.3}_{-5.7}$	0.03/0.95/0.02
	Conditioned on $m_{1,2}$	$1.4^{+3.4}_{-1.1}$	$2.5^{+1.2}_{-0.7}$	$2.6^{+5.9}_{-2.4}$	$0.1^{+0.5}_{-0.1}$	$1.5^{+19.6}_{-14.9}$	0.08/0.88/0.04
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$1.3^{+2.6}_{-1.0}$	$2.6^{+1.2}_{-0.4}$	$2.7^{+6.1}_{-2.5}$	$0.1^{+0.4}_{-0.1}$	$1.4^{+19.4}_{-15.9}$	0.08/0.9/0.03
	Posterior	$0.9^{+1.5}_{-0.6}$	$2.6^{+1.4}_{-0.4}$	$2.4^{+4.9}_{-2.2}$	$0.1^{+0.4}_{-0.1}$	$1.5^{+29.2}_{-26.1}$	0.05/0.93/0.02
GW200322_091133	Uninformative Prior	$7.3^{+15.9}_{-6.4}$	$170.1^{+2642.2}_{-153.5}$	$1.7^{+8.7}_{-1.6}$	$37.8^{+480.4}_{-36.1}$	$120.0^{+1137.3}_{-157.1}$	0.06/0.91/0.03
	Conditioned on $m_{1,2}$	$3.8^{+13.0}_{-3.3}$	$45.7^{+336.9}_{-41.8}$	$2.4^{+7.4}_{-2.3}$	$5.1^{+170.8}_{-5.0}$	$30.0^{+939.2}_{-30.0}$	0.09/0.9/0.01
	Conditioned on $m_{1,2}$ and $\chi_{\rm eff}$	$2.9^{+14.2}_{-2.6}$	$52.1^{+353.4}_{-48.2}$	$2.1^{+9.2}_{-1.9}$	$4.7^{+100.9}_{-4.6}$	$15.8^{+865.3}_{-53.9}$	0.07/0.84/0.09
	Posterior	$3.9^{+12.4}_{-2.8}$	$56.0^{+905.6}_{-52.2}$	$2.2^{+9.4}_{-2.0}$	$4.5^{+101.2}_{-4.4}$	$19.8^{+291.1}_{-79.5}$	0.16/0.8/0.04