

The attached figure is one of many that we all saw last October from the neutron-star merger GW170817.

Next week's problem is to estimate the masses of the merging objects, using what you can read off this figure, and verify that they indeed correspond the neutron stars.

A standard formula from the literature is

$$\dot{\omega} = \frac{24}{5} M^{5/3} \omega^{11/3}$$

where  $M$  is the total mass, and the masses are assumed equal.

ArXiv:1609.09349 gives a nice semi-classical derivation.

1995PhRvL..74.3515B gives a detailed derivation.

As is common in the relativity literature,  $G=c=1$ .

You need to relate the above formula to the curve in the figure.

You also want to choose sensible units for  $M$ .

Have fun!

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