Late time behavior of the kilonova light curves

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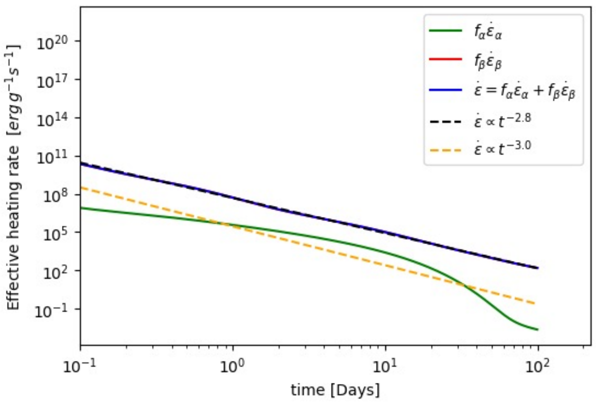
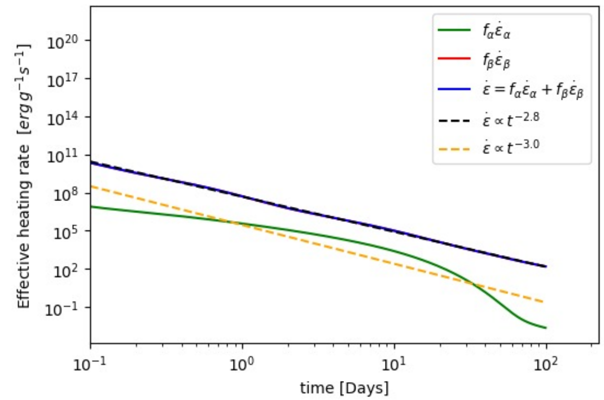
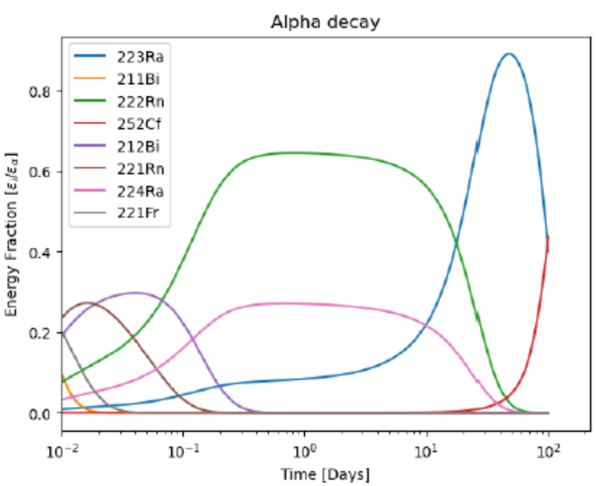
Apart from gravitational waves, neutron star mergers may also produce optical/infrared transients – KILONOVAE - powered by the radioactive decay of heavy elements. They peak on the scale of days to weeks after merger. Different decay modes such as alpha, beta, fission etc. contribute to the heating rates which define the luminosity curves.

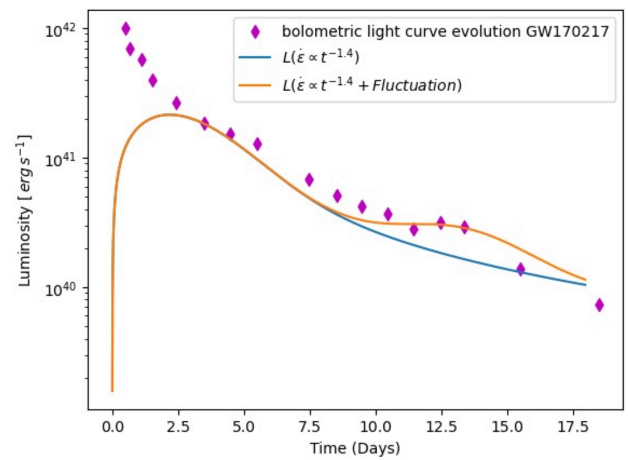


- Modified version of the Li-Paczyński model with experimental data on 1885 alpha and beta decays





- Contribution of different nuclei vary as a function of time



- Small fluctuations in the nuclear heating rates can result in bump like features in the light curves