Post merger dynamics of long-lived binary neutron star mergers

Michele Pasquali[1,2,†]

[1] Parma University, Parco Area delle scienze, 7/A I-43124 Parma
[*]michele.pasquali@studenti.unipr.it
[2] INFN gruppo collegato di Parma, Parco Area delle scienze, 7/A I-43124 Parma

We present the results of very long simulations of binary neutron stars (BNSs) for different equations of state (EoS). These simulations are performed up to ~ 140 ms after the merger, which allows to make a very detailed analysis of the remnant evolution that occur in the post-merger phase. We take into consideration the case of equal mass models with different EoS parametrized as piecewise polytropes plus a idea fluid thermal component with $\Gamma = 1.8$. We analyze the gravitational wave signal emitted during the evolution of such models as well as the thermal and rotational properties of the long living remnant in order to investigate the detectability of various phenomena (in particular, inertial mode excitation) by the current and third-generation ground-based detectors.

[†]michele.pasquali@studenti.unipr.it