

Important clues on the equation of state of compact stars might be revealed in the multi-messenger observation of BNS mergers. On one hand, the tidal deformability which encodes information about the radius of compact stars, can be obtained in the gravitational wave observation in the inspiral phase. On the other hand, the evolution of the remnant supra/hyper-massive compact star, which is tightly related to the maximum mass and rotational configuration of the remnant object, could be inferred from both gravitational wave observation and electro-magnetic counterparts. In order to understand the evolution of such a remnant compact star, which could possibly be a quark star, we have constructed differential rotating solutions for quark stars in general relativity. We have applied a rotation profile which is similar to the ones that are found in the remnant hypermassive compact stars produced in numerical relativity simulations, to help better understand the structure and possible behavior of it.