The impact of stellar winds on the mass of compact remnants (#280)

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In the last few years, it has become increasingly clear that we cannot understand the mass of compact remnants (especially black holes) without accounting for the mass loss history of their progenitor stars. In particular, the first direct detection of gravitational waves (GW150914) has been interpreted as the merger of two black holes with mass >25 Msun. If these black holes have stellar origin, such high mass can be explained only by assuming that the progenitor stars did not lose a conspicuous fraction of their mass by stellar winds. In this talk, I discuss the dependence of black hole mass on the model of stellar winds and supernova explosion we assume. Two main players in this scenario are the stellar metallicity and the Eddington ratio. The results I will present have been derived with our new binary population synthesis code SEVN (Spera, Mapelli & Bressan 2015, MNRAS, 451, 4086; Spera et al. in preparation), which adopts the PARSEC stellar evolution models (e.g. Chen et al. 2015, MNRAS, 452, 1068).