

Exotic compact objects (ECO), with microscopic corrections at the horizon scale, may form in Nature as binary sources, and mimic the coalescence of ordinary black holes. In this talk we discuss the signatures which may be used, together with gravitational wave observations, to distinguish between such exotic states of matter. We investigate some possible smoking gun effects, as the tidal deformations, and the absence of absorption at the horizon. We assess the ability of LISA to detect the ECO's Love numbers and tidal heating, and their constraints, proving how these effects can be used to bound the compactness of the exotic object down to the Planck scale.