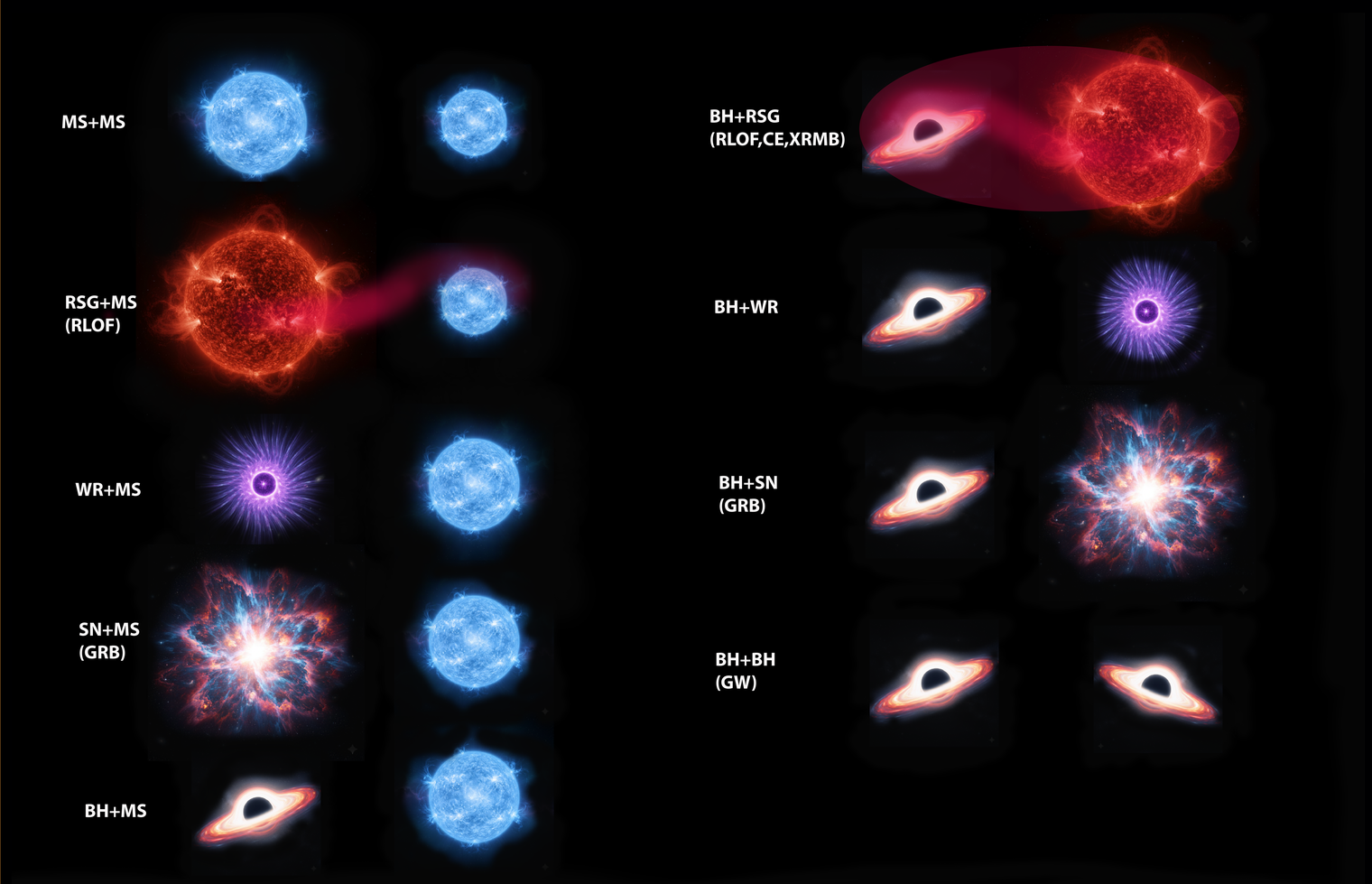
MOBY



Massive binary star evolution overview: MS - main sequence star, RSG - red supergiant, RLOF - Roche lobe overflow - mass transfer phase, WR - Wolf-Rayet star, SN - supernova explosion, BH - black hole

The MOBY project emerged from the need to understand the evolution of massive binary systems, indicated as possible progenitors of gravitational waves by the observations of LIGO, Virgo and KAGRA detectors . Gravitational waves are "ripples" in spacetime caused by some of the Universe's most violent and energetic processes, such as black hole mergers.

We calculate the evolution of binary stellar systems using the numerical code MESA (Modules for Experiments in Stellar Astrophysics). This code enables us to create detailed models of massive binary systems with stars ranging from 100 to 250 solar masses, aiming to test if it is possible to reproduce double black holes more massive than 50 solar masses.

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MOdeling BinarY Systems That End in Stellar Mergers and Give Rise to Gravitational Waves

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