Searching for boson-star mergers in gravitational-wave data

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Gravitational waves provide us with an unique opportunity to observe ultra compact objects, such as black-holes, in a highly dynamical state, as pairs of these form and merge. This allows us to study the dynamics of space-time in the strong gravity regime and, in particular, search for subtle signatures of, nowadays theoretical, exotic objects known as black-hole mimickers. Among these, so-called boson stars are especially appealing due their simplicity and the fact that the particles building them up, known as ultralight bosons, are widely considered strong candidates to form (part of) what we know as Dark Matter. In this seminar I will describe ongoing efforts to produce catalogs of numerically simulated gravitational-wave signals from boson-star mergers -- and the corresponding surrogate models -- that can be then compared to existing LIGO-Virgo data, together with the corresponding data analysis techniques.