iP2i LES 2 INFINIS LYON SEMINAR

« Testing General Relativity with the ringdown »

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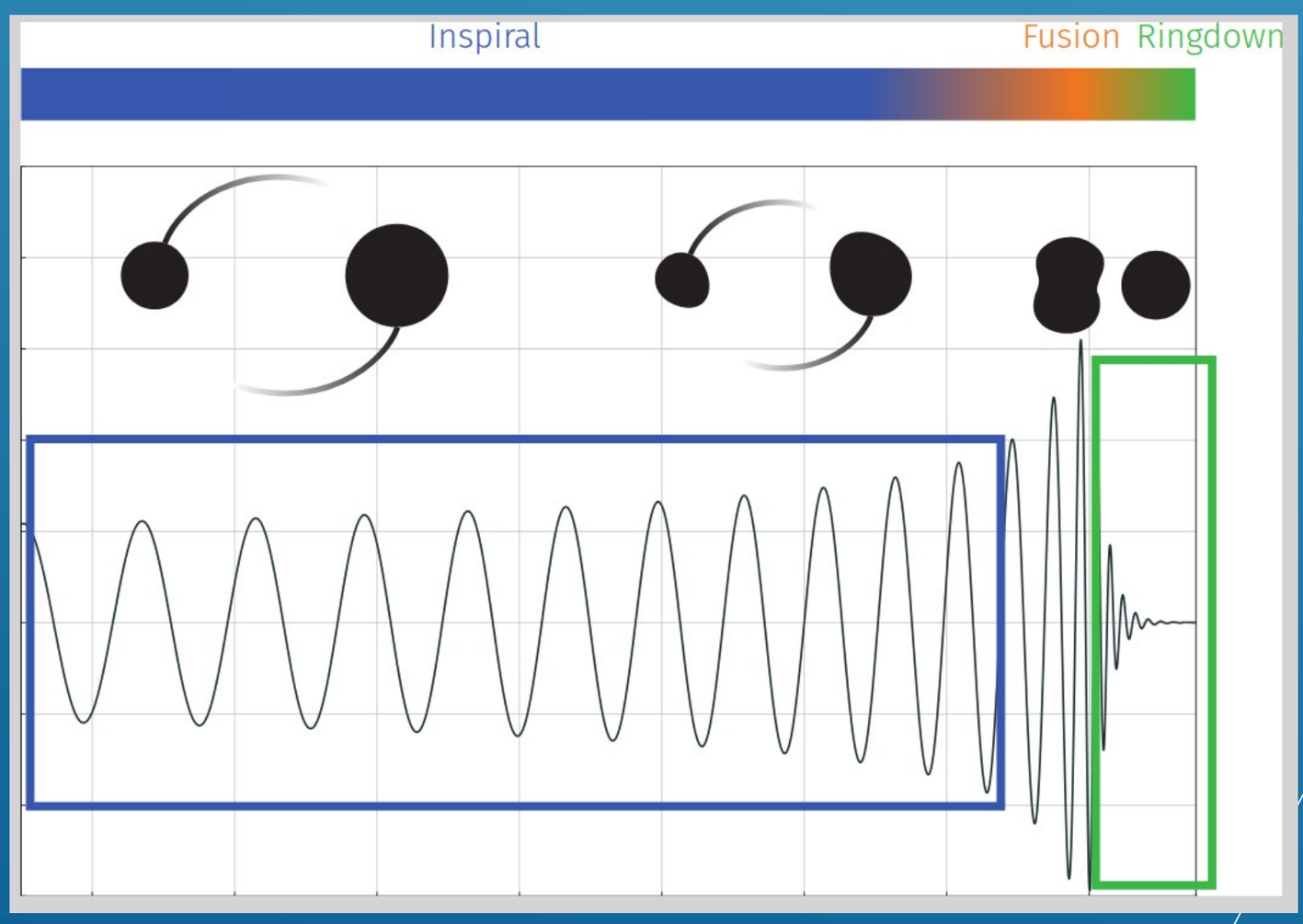
The first detection of gravitational waves (GWs) from a binary black hole (BH) merger in 2015 marked the beginning of a new era for tests of General Relativity (GR): the strong gravity regime of this theory can now be tested through the direct observation of BHs. The last phase of the GW signal of a binary BH merger, called the ringdown, is made of a superposition of modes called the quasi-normal modes (QNMs): measuring these modes and comparing them with theoretical predictions constitutes the black hole spectroscopy program, which can now be realized thanks to recent observations with high signal-to-noise ratio such as GW250114. However, in order to constrain GR using GW QNM measurements, one needs to overcome the technical challenge of building theoretical predictions for beyond-GR theories. In this talk, I will show how such a computation can be performed in several modified gravity theories. I will explain why the computation is more difficult than in GR and present an algorithm that allows one to formulate a well-posed numerical problem for a broad class of theories beyond GR.



March 5, 2026 - Amphi Dirac, 11 am