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## Gravitational waves from first-order phase transitions: A hybrid simulation, and signal enhancement from density perturbations

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Over the next few decades, we will have an exciting opportunity to detect GWs from the early Universe with space interferometers. In this talk, we first propose an efficient numerical scheme to calculate GWs from sound waves in first-order phase transitions, which reveals more detailed structure of the spectrum. Based on this simulation, we next discuss the possibility of the enhancement of the GW signal in the presence of density perturbations. The first part is based on 2010.00971 with T. Konstandin and H. Rubira (DESY), while the second part is based on an ongoing work with T. Konstandin, H. Rubira, and J. van de Vis (DESY).

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