

Gravitational waves as a probe of the electroweak phase transition

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A first-order phase transition produces gravitational waves and such a transition only occurs if there is physics beyond the standard model. In this sense gravitational wave experiments can be considered as detectors of new physics. In this talk we review the status of the eLISA experiment and we analyze its capabilities for probing a first-order phase transition. We demonstrate that in some cases eLISA is able to discover new physics arising at the electroweak scale or even much above. Moreover, by considering some illustrative beyond-the-standard-model scenarios with a first-order electroweak phase transition, we highlight the existence of parameter regions that are hard to probe at the LHC but are testable at eLISA.

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