

Cosmology and gravity in the new era of multi-messenger astronomy

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Abstract We review the standard model of cosmology and gravity, namely Lambda-CDM paradigm and general relativity. We mention their successes and we describe possible tensions that appear between theoretical predictions and observations, that may ask for modifications of the standard lore. Finally, we describe how gravitational wave observations and multi-messenger astronomy provides a new tool to investigate the universe.

Keywords cosmology, gravity, general relativity, modified gravity, dark energy, dark matter, inflation, black holes, gravitational waves, multi-messenger astronomy

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