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## **B-mode detection in the Cosmic Microwave Background**

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According to standard inflationary theories, the origin of cosmological structures is explained by a period of exponential expansion of the Universe induced by the potential of a scalar field and its quantum fluctuations. In addition to these primordial densities, inflation also predicts the existence of a primordial gravitational waves background. The imprint of which would be visible on the spectra of polarisation maps of the Cosmic Microwave Background (CMB) in the form of B-modes. Precise measurements of CMB polarisation and B-modes detection is therefore one of the priorities in modern cosmology.

In the first part, I will make an introduction to the cosmological standard model and how the CMB allows to constrain it. I will discuss more specifically about the inflationary period of the Universe, and how CMB modes B can help us to understand the nature of inflation. In the second part, we will describe the methods and tools necessary for the study of the B modes. I will discuss measurement biases induced by contaminations due to our galaxy, and methods to estimate the B mode signal.

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