



Violation of the Rotational Invariance in the CMB Bispectrum

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We investigate a statistical anisotropy on the Cosmic Microwave Background (CMB) bispectrum, which can be generated from the primordial non-Gaussianity induced by quantum fluctuations of a vector field. We find new configurations in the multipole space of the CMB bispectrum given by $\ell_1 = \ell_2 + \ell_3 + 2$, $|\ell_2 - \ell_3| - 2$ and their permutations, which violate the rotational invariance, such as an off-diagonal configuration in the CMB power spectrum. We also find that in a model presented by Yokoyama and Soda (2008), the amplitude of the statistically anisotropic bispectrum in the above configurations becomes as large as that in other configurations such as $\ell_1 = \ell_2 + \ell_3$. As a result, it might be possible to detect these contributions in future experiments, which would give us novel information about the physics of the early Universe.

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