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Plans of future research

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In future research, we aim to detect the circular polarization mode of the stochastic gravitational wave background by analyzing pulsar observation data. We also construct a detection theory for the linear polarization mode of the stochastic gravitational wave background.

【Detection of circular polarization mode of stochastic gravitational wave background】

In this study, we aim to detect the circular polarization mode of the stochastic gravitational wave background using pulsar. In previous studies, the unpolarized mode was detection target [1]. Detection of the circular polarization mode is the evidence of the space-time parity violation. Chern-Simon gravity theory [2] is a theory that can generate the circular polarization mode. Here, the method for detecting the circular polarization mode was clarified in my master's thesis [3].

【Construction of detection theory for linear polarization mode of stochastic gravitational wave background】

A method for detecting the linear polarization mode of the stochastic gravitational wave background is not yet known. Therefore, in this study, we will devise a method to detect linear polarization mode using pulsar. Then, using the detection theory, we aim to detect the linear polarization mode. The detection of linear polarization modes is the evidence of the space-time symmetry breaking. One theory that can generate linear polarization modes is a inflation theory [4], in which scalar and gauge fields interact.

References

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