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Chameleon-induced signatures in polarization of gravitational waves

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The chameleon-induced polarization modes of gravitational waves (GWs) are explored in $f(R)$ gravity arising due to scalar field. The chameleon mechanism works strongly in high density regions where mass of the scalar field particle becomes high and the oscillations of the scalar field sharply increase. This produces enhanced scalar modes in addition to the tensor modes of polarization in gravitational waves. It is shown that this approach can be significantly used to distinguish the Lambda CDM models from modified gravity models subject to detection of all modes in future GWs detections.

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