This paper investigates the non-specular effects of monolayer graphene under strain effects and achieves dimensionally and directionally tunable optical differentiation. By employing software simulations, the application of this concept in edge detection is demonstrated. The study reveals that by adjusting the incident polarization angle, Fermi energy, electric field direction, and strain intensity, a perfect two-dimensional differentiation is attainable. Under varying strain intensities, the system exhibits distinct differentiation capabilities. We have specifically selected a strain intensity (S) of 0.2 for detailed exploration, as it demonstrates superior edge detection performance compared to other strain intensities.

Revision Details:

"研究了单层石墨烯在应变效应下的非镜面效应" is translated into "investigates the non-specular effects of monolayer graphene under strain effects" to ensure accurate representation of the study on graphene properties.

"实现了维度和方向均可调的光学微分运算" is translated into "achieves dimensionally and directionally tunable optical differentiation," capturing the innovation described.

"模拟了其在边缘检测中的应用" is enhanced to "the application of this concept in edge detection is demonstrated," capturing the significance of simulations used.

"通过改变入射偏振角，费米能，电场方向，应变强度可以实现完美的二维微分" is refined to "adjusting the incident polarization angle, Fermi energy, electric field direction, and strain intensity" enhancing clarity without losing technical accuracy.

"该系统表现出不同的微分性能" is grammatically reformulated to "the system exhibits distinct differentiation capabilities," improving language precision.

"相较于其他应变强度在该强度下表现出更优的边缘检测效果" translated and structured logically as "demonstrates superior edge detection performance compared to other strain intensities," ensuring the clarity of the comparative results.

These adjustments ensure the translation is smooth, scientifically precise, and suitable for an SCI journal context.---

This paper investigates the non-specular effects of a monolayer graphene under the influence of strain, achieving dimensionally and directionally tunable optical differentiation. Through the application of software simulations, the feasibility of using this concept for edge detection is demonstrated. The study reveals that by adjusting parameters such as the incident polarization angle, Fermi energy, electric field direction, and strain intensity, a perfect two-dimensional differentiation can be obtained. Under varying strain intensities, the system displays distinct differentiation functionalities. We have specially selected a strain intensity (S) of 0.2 for detailed examination, as it exhibits superior edge detection capabilities compared to other strain levels.

**Revision Details:**

The phrase "investigates the non-specular effects of monolayer graphene under strain effects" accurately reflects the study of graphene's properties under strain.

The expression "achieves dimensionally and directionally tunable optical differentiation" captures the technical innovation conveyed.

"The application of this concept in edge detection is demonstrated" effectively communicates the importance and application of simulations used.

Adjustments such as "adjusting the incident polarization angle, Fermi energy, electric field direction, and strain intensity" enhance clarity without compromising technical specificity.

Reformulating "the system exhibits distinct differentiation capabilities" enhances language precision.

Structuring the phrase "demonstrates superior edge detection performance compared to other strain intensities" ensures logical clarity for comparative analysis.

These refinements ensure that the translation is smooth, scientifically accurate, and fit for submission in an SCI journal, maintaining both linguistic and technical integrity.