

## Born-regulated理论中的光线偏转

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## Deviation of Light Path in Born-regulated Gravity in Four Dimension

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## 摘要

根据爱因斯坦的引力场理论, 当光线通过引力场时受到引力的作用而发生偏转. 对光线在引力场中偏转的研究有助于解决引力透镜问题, 对研究宇宙中的暗能量也是有意义的. 根据Born-regulated引力理论的时空度规来研究光线偏折. 推导Born-regulated理论中的光线偏转角为 $\Delta\varphi \approx 4M_{\text{rmin}} - 4M_{\text{rmin}} 49k^2 \beta_{\text{r6min}}$ . 很明显, 结果显示当 $\beta \rightarrow 0$ 和 $k \rightarrow 0$ 时,  $\Delta\varphi \rightarrow 4M_{\text{rmin}}$ , 这正是由爱因斯坦理论推导出的结果, 说明当参量 $\beta \rightarrow 0$ 和 $k \rightarrow 0$ 时, Born-regulated理论回到爱因斯坦的广义相对论.

关键词: [Born-regulated引力理论](#); [光线偏折](#); [爱因斯坦相对论](#)

## Abstract:

Deviation of light from its straight path is caused by the presence of massive objects, i.e., the presence of gravitational field according to the general theory of relativity. It is shown that the low energy effective field theory on D-branes is of Born-regulated gravity theories. In this work a Born-regulated type gravitational field is postulated. According to the space time metric in the Born-regulated gravity theory, An explicit representation of the angular deviation of light path is derived. A Born-regulated type theory of gravitational field is postulated, and an explicit representation of the angular deviation of light path is derived,  $\Delta\varphi \approx 4M_{\text{rmin}} - 4M_{\text{rmin}} 49k^2 \beta_{\text{r6min}}$ . Clearly, the result shows that  $\beta \rightarrow 0$  and  $k \rightarrow 0$ ,  $\Delta\varphi \rightarrow 4M_{\text{rmin}}$  which is just the result from the Einstein's general relativity theory.

Keywords: [Born-regulated gravity](#); [deviation of light path](#); [Einstein's general relativity theory](#)

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