1.色差的测量

1）自准直法

|  |  |  |
| --- | --- | --- |
| 红光焦距f红/cm | 蓝光焦距f蓝/cm | 色差x=|f红-f蓝|/cm |
|  |  |  |
|  |  |  |
|  |  |  |

2）公式法

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 成清晰蓝色像时透镜位置s蓝1/cm | 成清晰蓝色像时白屏位置s蓝2/cm | 成清晰红色像时透镜位置s红1/cm | 成清晰蓝色像时白屏位置s红2/cm | 红光焦距f红/cm | 蓝光焦距f蓝/cm | 色差x=|f红-f蓝|/cm |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

3）共轭法

红色光

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 物屏位置/cm | 透镜位置1/cm | 透镜位置2/cm | 像屏位置/cm | 物屏和像屏的间距*D*（cm） | 两次清晰成像时透镜的位置差*L*（cm） | 红光焦距*f红*（cm） |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

蓝色光

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 物屏位置/cm | 透镜位置1/cm | 透镜位置2/cm | 像屏位置/cm | 物屏和像屏的间距*D*（cm） | 两次清晰成像时透镜的位置差*L*（cm） | 蓝光焦距*f蓝*（cm） |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
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2.球差的测量

1）公式法测球差

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 物屏位置/cm | 圆孔球插屏成像透镜位置S1 /cm | 圆孔球差屏成像像屏位置S1’ | 环形球差屏成像透镜位置S2/cm | 环形球差屏像屏位置S2’/cm | 圆孔球差屏对应焦距f1/cm | 环形球差屏f2/cm | 球差x/cm |
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|  |  |  |  |  |  |  |  |

2）共轭法侧球差

圆形屏

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 物屏位置/cm | 透镜位置1/cm | 透镜位置2/cm | 像屏位置/cm | 物屏和像屏的间距*D*（cm） | 两次清晰成像时透镜的位置差*L*（cm） | 焦距*f*（cm） |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

环形屏

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 物屏位置/cm | 透镜位置1/cm | 透镜位置2/cm | 像屏位置/cm | 物屏和像屏的间距*D*（cm） | 两次清晰成像时透镜的位置差*L*（cm） | 焦距*f*（cm） |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
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3.选做

1）不同焦距凸透镜色差测量

透镜焦距：

|  |  |  |
| --- | --- | --- |
| 红光焦距f红/cm | 蓝光焦距f蓝/cm | 色差x=|f红-f蓝|/cm |
|  |  |  |
|  |  |  |
|  |  |  |

透镜焦距：

|  |  |  |
| --- | --- | --- |
| 红光焦距f红/cm | 蓝光焦距f蓝/cm | 色差x=|f红-f蓝|/cm |
|  |  |  |
|  |  |  |
|  |  |  |

2）凹透镜色差的测量

红光

|  |  |  |
| --- | --- | --- |
| 凸透镜成像位置 x2 | 凹透镜位置x1 | 红光焦距*f*（cm） |
|  |  |  |
|  |  |  |
|  |  |  |

蓝光

|  |  |  |
| --- | --- | --- |
| 凸透镜成像位置 x2 | 凹透镜位置x1 | 蓝光焦距*f*（cm） |
|  |  |  |
|  |  |  |
|  |  |  |