

符号说明

1. 凡数据后有符号“*”，表示光栏位置或其值间有光栏。
2. 凡没有注明数值单位的，均以毫米为单位；若注明以英寸为单位，则在该镜头资料中均以英寸为单位。

3. 常用符号：

| | |
|---------------|--|
| ΣS_1 | 球差系数和； |
| ΣS_2 | 彗差系数和； |
| ΣS_3 | 象散系数和； |
| ΣS_4 | 场曲系数和； |
| ΣS_5 | 畸变系数和； |
| LA' | 球差； |
| $\Delta H'$ | 绝对畸变； |
| x'_1 | 细光束子午场曲； |
| x'_2 | 细光束弧矢场曲； |
| $x'_1 - x'_2$ | 象散； |
| K'_{T1} | 全口径的子午彗差； |
| $K'_{T0.7}$ | 0.707口径的子午彗差； |
| QP | 相对畸变； |
| HI | 理想象高； |
| E.F.L | 焦距； |
| B.F.L | 后截距； |
| FNo. | 相对孔径倒数； |
| F.A. | 视场角（有些资料中无 F.A. 数据，象差曲线是按 $F.A. = 8'$ 来计算的，可扩大容限）； |
| L'_p | 入瞳距离； |
| η | 物高； |
| ω | 镜头视场。 |

编号: 01-00-001

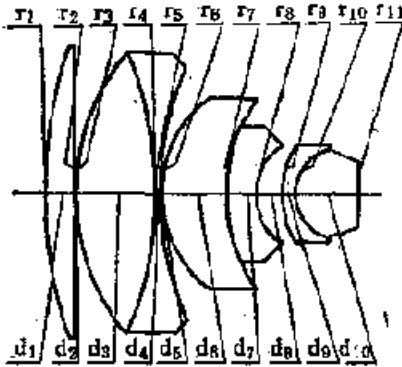
摄影物镜

E.F.L=100

B.F.L=7.12

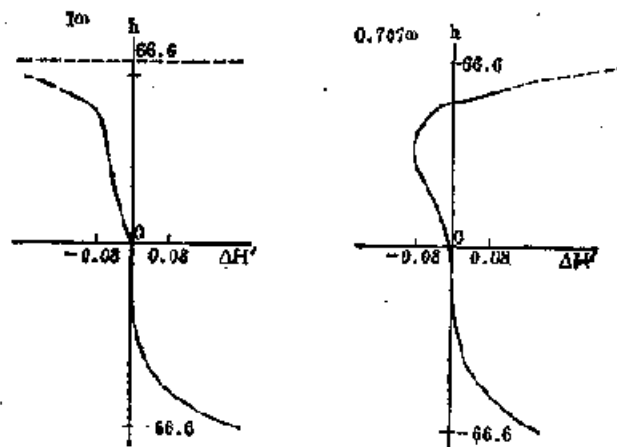
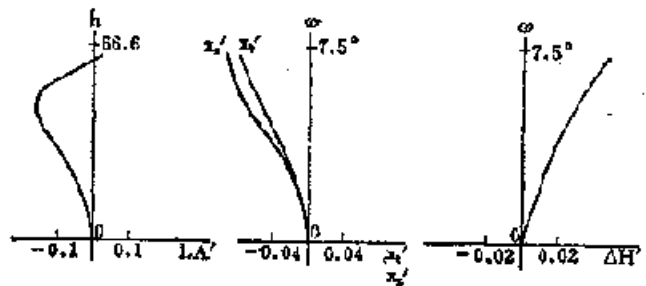
FNo.=0.75

F.A.=±7.5°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|------|--------|------|----|----------|-------|--------|------|
| 1 | 206.0 | 14.5 | 1.6940 | 54.5 | 7 | 71.7 | 14.50 | 1.7343 | 28.4 |
| 2 | 8390.0 | 0.2 | | | 8 | 24.19 | 13.42 | | |
| 3 | 98.95 | 36.4 | 1.6725 | 44.7 | 9 | 57.5 | 5.44 | 1.8241 | 36.1 |
| 4 | -165.4 | 2.43 | 1.7343 | 28.4 | 10 | 21.70 | 30.0 | 1.7922 | 50.2 |
| 5 | 130.0 | 0.2 | | | 11 | ∞ | | | |
| 6 | 52.40 | 30.7 | 1.6940 | 54.5 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1m) |
|----------------|---------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.47 | -0.15 | 0.0029 | -0.18 | 0.12 | 13.15 | 0.34% |
| h 或 ω % | I.A' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.01 $^\circ$ | 0.045 | -0.079 | -0.093 | 0.014 | 5.4 | -0.0015 |
| 70 | -0.16 | 0.028 | -0.051 | -0.075 | 0.024 | 0.67 | -0.0094 |



编号: 01-00-002

六组元大相对孔径摄影镜头

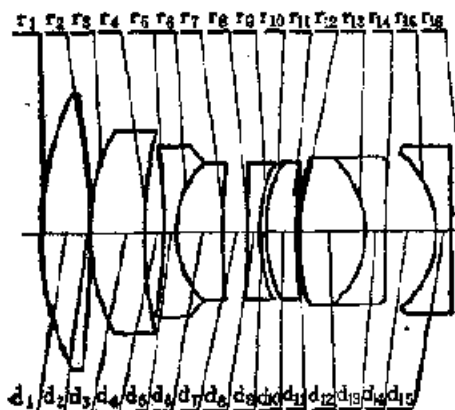
E.F.L=125

B.F.L=

FNo.=0.80

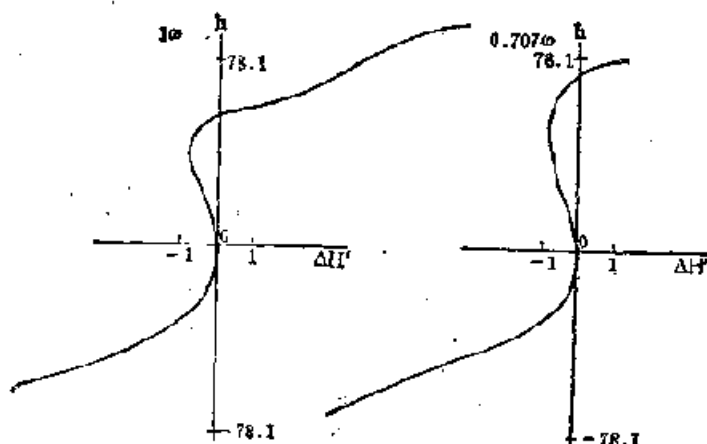
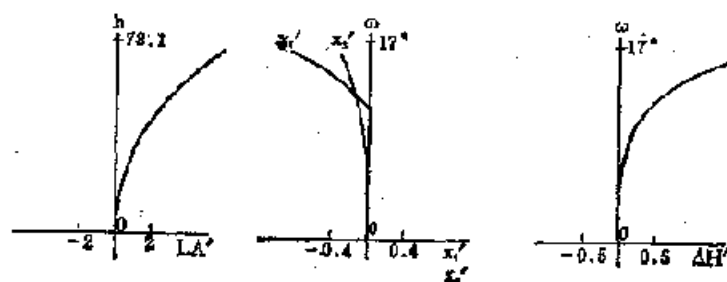
F.A.=34°

Lp₁'=0



| 序号 | r | d | n _d | v | 序号 | r | d | n _d | v |
|----|--------|------|----------------|------|----|--------|------|----------------|------|
| 1 | 221.1 | 38.3 | 1.6204 | 59.8 | 9 | 115.7 | 6.1 | | |
| 2 | -784.0 | 0.7 | | | 10 | 110.9 | 23.7 | 1.6242 | 47.0 |
| 3 | 143.2 | 42.2 | 1.6220 | 53.0 | 11 | 310.5 | 1.2 | | |
| 4 | 570.9 | 10.1 | | | 12 | 137.0 | 50.4 | 1.6255 | 35.7 |
| 5 | -428.3 | 12.7 | 1.6728 | 32.2 | 13 | -74.7 | 14.2 | 1.7281 | 28.4 |
| 6 | 79.1 | 31.6 | 1.6202 | 60.3 | 14 | 7492.0 | 37.5 | | |
| 7 | 481.3 | 17.6 | | | 15 | -72.1 | 11.0 | 1.5686 | 56.1 |
| 8 | 3913.0 | 11.7 | 1.6254 | 35.8 | 16 | ∞ | | | |

| | ΣS ₁ | ΣS ₂ | ΣS ₃ | ΣS ₄ | ΣS ₅ | HI | QP(1%) |
|--------|-----------------|-----------------|------------------|------------------|-------------------------------------|-----------------|-------------------|
| | 3.6 | -2.5 | 0.14 | -0.39 | 0.78 | 38 | 1% |
| h 或 ω% | LA' | ΔH' | x ₁ ' | x ₂ ' | x ₁ ' - x ₂ ' | K _{T1} | K _{T0.1} |
| 100 | 5.8 | 1.5 | -0.86 | -0.35 | -0.50 | 7.6 | -2.2 |
| 70 | 2.6 | 0.34 | 0.017 | -0.14 | 0.15 | -8.1 | -2.9 |



编号, 01-00-003

透 镜 系 统

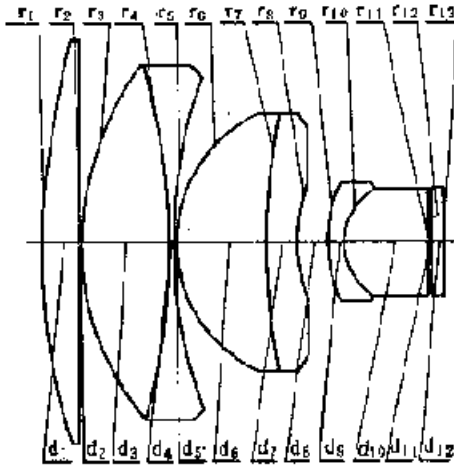
E. F. L = 100

B. F. L =

FNo. = 0.68

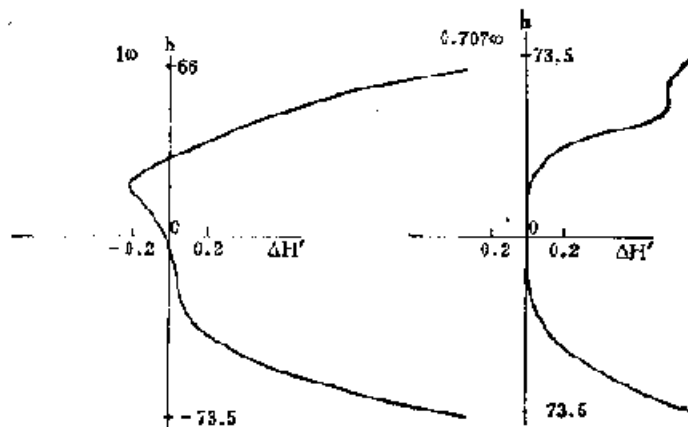
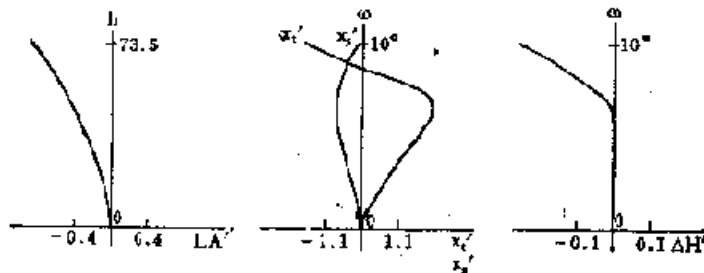
F. A. = 20°

$Lp_1 = 0$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|----------|-------|---------|-------|----|----------|-------|---------|-------|
| 1 | 277.97 | 16.58 | 1.59424 | 58.02 | 8 | 27.21 | 13.19 | | |
| 2 | ∞ | 0.34 | | | 9 | 64.25 | 7.45 | 1.58779 | 36.75 |
| 3 | 111.65 | 35.91 | 1.64129 | 55.15 | 10 | 26.67 | 34.04 | 1.84035 | 42.04 |
| 4 | -274.08 | 3.62 | 1.67764 | 31.97 | 11 | ∞ | 1.20 | | |
| 5 | 212.75 | 1.19 | | | 12 | ∞ | 5.11 | 1.50207 | 61.21 |
| 6 | 57.26 | 36.24 | 1.64514 | 57.70 | 13 | ∞ | | | |
| 7 | 274.08 | 13.79 | 1.72734 | 29.03 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -1.2 | 0.050 | 0.22 | -0.54 | 0.067 | 13 | -1.4% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{f1} | $K'_{f0.7}$ |
| 100 | -0.85 | -0.26 | -0.16 | -0.001 | -0.16 | 5.5 | 3.7 |
| 70 | -0.53 | -0.0079 | 0.23 | -0.077 | 0.278 | 7.9 | 0.59 |



编号: 01-00-004

透 镜 系 统

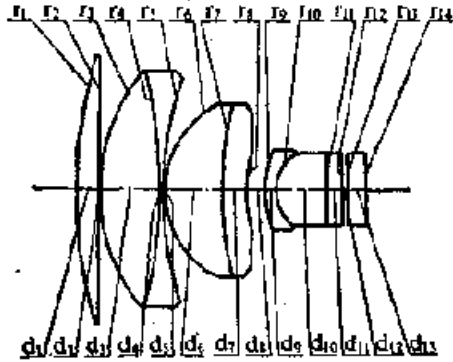
E. F. L-100

B. F. L-

FNo. = 0.61

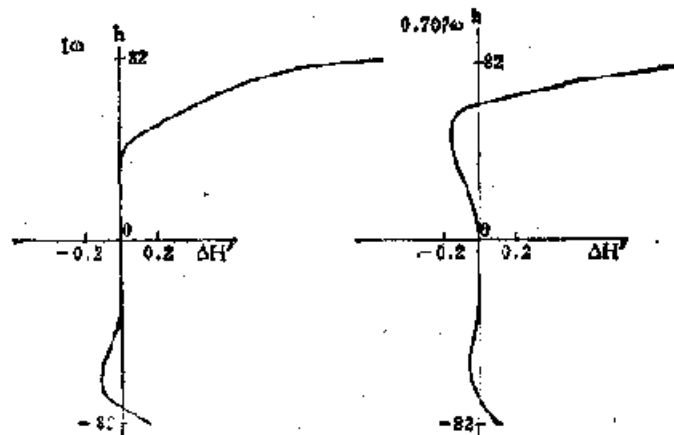
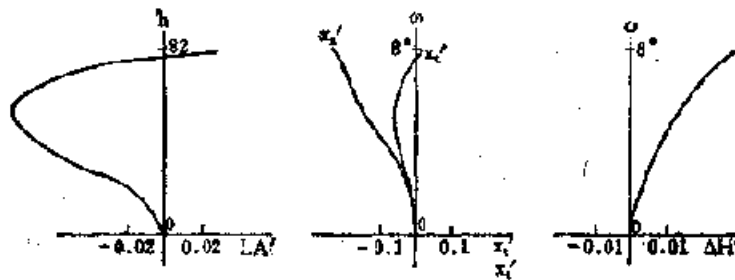
F. A. = 16°

Lp₁' = 0



| 序号 | r | d | n _e | v _e | 序号 | r | d | n _e | v _e |
|----|---------|-------|----------------|----------------|----|-------|-------|----------------|----------------|
| 1 | 245.12 | 17.85 | 1.59424 | 58.02 | 8 | 29.80 | 13.05 | | |
| 2 | 4460.43 | 0.37 | | | 9 | 65.97 | 8.12 | 1.62058 | 36.37 |
| 3 | 112.04 | 37.88 | 1.66152 | 50.59 | 10 | 29.47 | 20.17 | 1.92765 | 21.34 |
| 4 | -456.43 | 3.51 | 1.73430 | 28.19 | 11 | ∞ | 9.13 | 1.79190 | 25.55 |
| 5 | 213.49 | 0.37 | | | 12 | ∞ | 1.61 | | |
| 6 | 60.17 | 38.66 | 1.64304 | 59.85 | 13 | ∞ | 11.59 | 1.50207 | 61.21 |
| 7 | 294.69 | 13.69 | 1.76859 | 26.31 | 14 | ∞ | | | |

| | ΣS ₁ | ΣS ₂ | ΣS ₃ | ΣS ₄ | ΣS ₅ | HI | QP (1ω) |
|---------|-----------------|-----------------|------------------|------------------|-----------------------------------|-----------------|-------------------|
| | -0.52 | -0.42 | 0.060 | -0.54 | 0.088 | 14 | 0.21% |
| h 或 ω % | LA' | ΔH' | x _t ' | x _s ' | x _t '-x _s ' | K _{T1} | K _{T0.7} |
| 100 | 0.028 | 0.03 | 0.0079 | -0.23 | 0.24 | 7.8 | 0.090 |
| 70 | -0.08 | 0.014 | -0.069 | -0.15 | 0.08 | 1.6 | -0.094 |



编号: 01-00-005

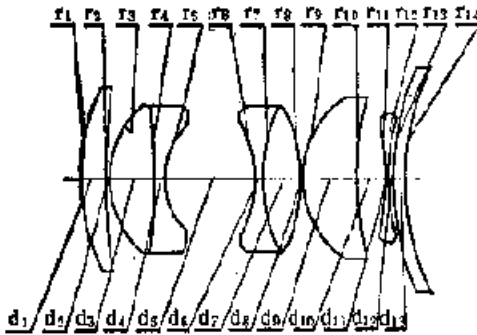
用于电子影象管的透镜系统

E. F. L = 100.0

B. F. L =

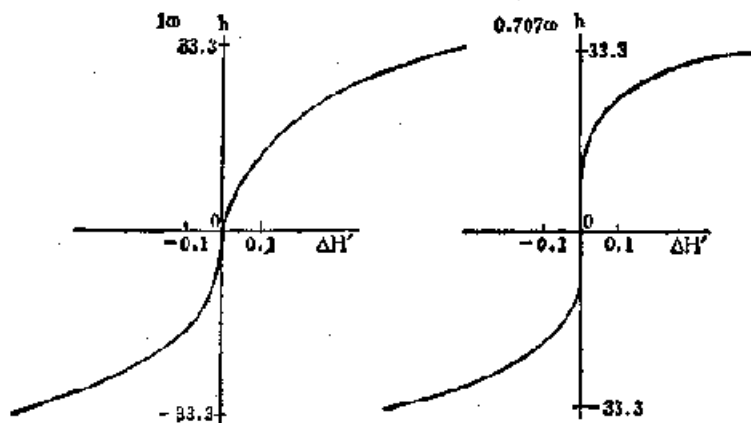
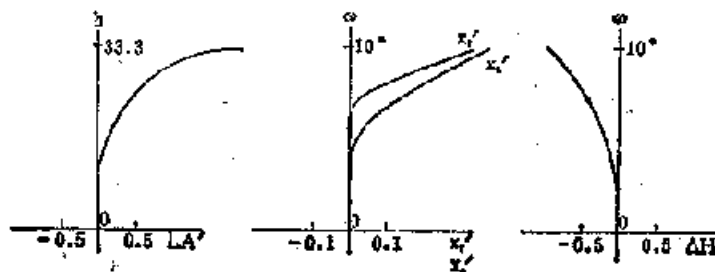
FNo. = 1.5

F. A. = 20°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|------|-------|------|----|--------|-------|-------|------|
| 1 | 73.0 | 14.0 | 1.694 | 54.6 | 8 | -58.9 | 0.3 | | |
| 2 | 410.0 | 0.3 | | | 9 | 41.7 | 23.8 | 1.678 | 47.0 |
| 3 | 44.4 | 17.9 | 1.694 | 54.6 | 10 | 132.3 | 12.55 | | |
| 4 | -170.0 | 4.8 | 1.813 | 25.3 | 11 | -239.0 | 1.8 | 1.813 | 25.3 |
| 5 | 30.3 | 39.5 | | | 12 | 69.8 | 3.6 | | |
| 6 | -59.3 | 4.3 | 1.678 | 32.0 | 13 | 111.5 | 5.4 | 1.512 | 63.1 |
| 7 | 66.5 | 18.2 | 1.694 | 54.6 | 14 | 105.3 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|--------|----------------|
| | 0.062 | -0.050 | -0.042 | 0.084 | -0.56 | 18.21 | -5.5% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_T | $K_{T(0.7)}$ |
| 100 | 2.03 | -1.01 | 0.35 | 0.38 | -0.029 | -0.028 | 0.039 |
| 70 | 0.47 | -0.33 | 0.033 | 0.14 | -0.11 | -0.21 | -0.455 |



编号: 01-00-006

共轴光学系统的改进

E. F. L = 100.0

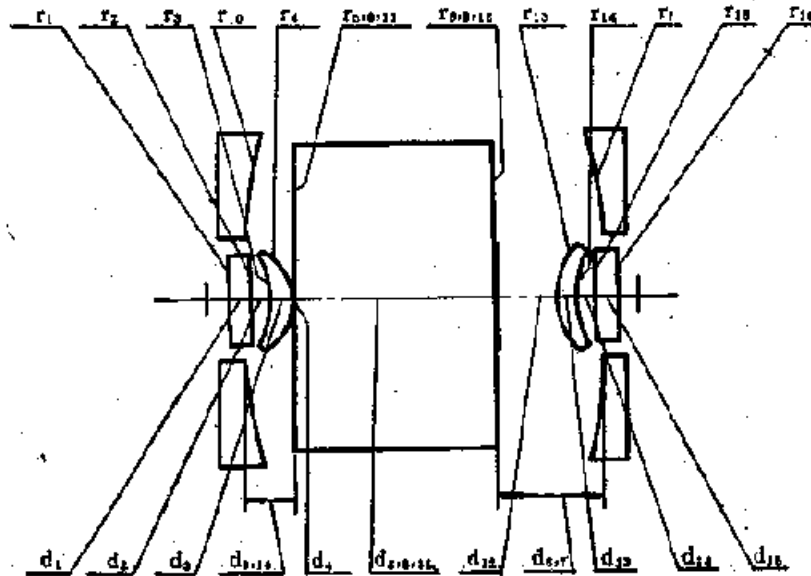
B. F. L =

FN₀ = 0.7

F. A. =

物点 = 5.48

象点 = 5.48



| 序 号 | r | d | n _d | v |
|-----|----------|---------|----------------|------|
| 1 | ∞ | 10.40 | 1.503 | 51.0 |
| 2 | ∞ | 6.58 | | |
| 3 | - 55.04 | 11.00 | 1.540 | 56.0 |
| 4 | - 27.52 | 0.76 | | |
| 5 | ∞ | 93.33 | 1.503 | 38.0 |
| 6 | ∞ | 53.08 | | |
| 7 | - 308.94 | - 53.08 | - 1.0 | |
| 8 | ∞ | - 93.33 | - 1.503 | 38.0 |
| 9 | ∞ | - 23.87 | - 1.0 | |
| 10 | 308.94 | 23.87 | | |
| 11 | ∞ | 93.33 | 1.503 | 38.0 |
| 12 | ∞ | 29.97 | | |
| 13 | 27.52 | 11.00 | 1.540 | 56.0 |
| 14 | 55.04 | 6.58 | | |
| 15 | ∞ | 10.40 | 1.503 | 51.0 |
| 16 | ∞ | | | |

✓ 编号: 01-00-007

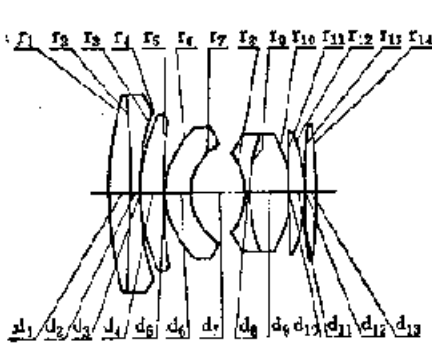
摄影物镜

E.F.L=1.0

B.F.L=0.675

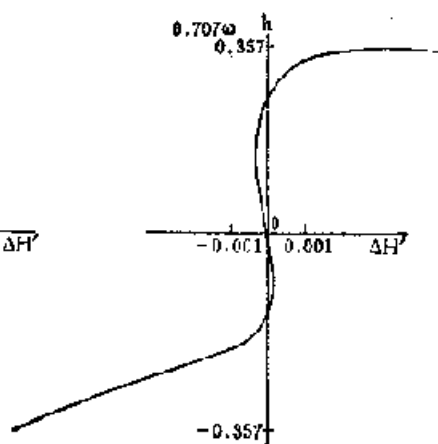
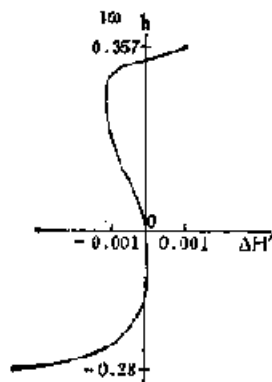
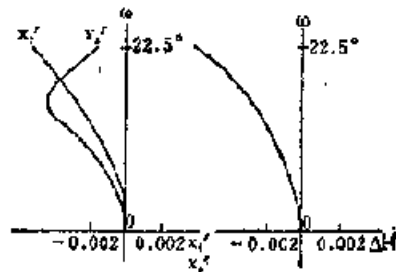
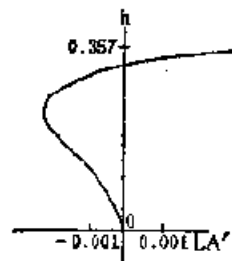
FNo.=1.4

F.A.=±22.5°



| 序号 | r | d | n _e | v _e | 序号 | r | d | n _e | v _e |
|----|----------|---------|----------------|----------------|----|----------|---------|----------------|----------------|
| 1 | 2.11619 | 0.12629 | 1.78869 | 43.53 | 8 | -0.39007 | 0.02870 | 1.81262 | 25.28 |
| 2 | -6.13873 | 0.05741 | 1.72732 | 29.07 | 9 | 1.20731 | 0.21049 | 1.78869 | 43.53 |
| 3 | 1.30647 | 0.00191 | | | 10 | -0.67409 | 0.00191 | | |
| 4 | 0.93180 | 0.12246 | 1.78869 | 43.53 | 11 | -8.18542 | 0.06889 | 1.78869 | 43.53 |
| 5 | 3.31787 | 0.00191 | | | 12 | -0.87970 | 0.00096 | | |
| 6 | 0.46701 | 0.15308 | 1.81262 | 25.28 | 13 | 3.03255 | 0.05697 | 1.78869 | 43.53 |
| 7 | 0.33301 | 0.26320 | | | 14 | 2.20972 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QF(1%) |
|---------|--------------|--------------|------------------|------------------|-----------------------------------|-----------------|-------------------|
| | -0.0028 | 0.00118 | 0.00059 | -0.0044 | -0.0046 | 0.41 | -1.4% |
| h 或 ω % | LA' | ΔH' | x _t ' | x _s ' | x _t '-x _s ' | K _{T1} | K _{T0.7} |
| 100 | 0.0080 | -0.0060 | -0.0049 | -0.00169 | -0.0032 | -0.014 | -0.0025 |
| 70 | -0.0023 | -0.0025 | -0.0026 | -0.0045 | 0.0019 | -0.011 | -0.0011 |



编号: 01-00-008

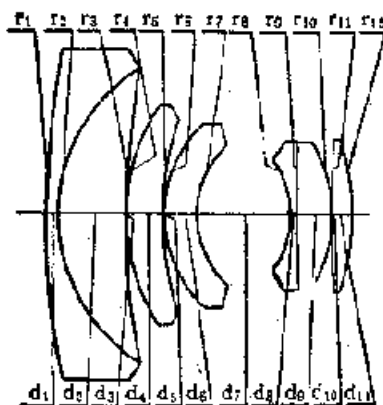
摄影物镜

E.F.L=1.0

B.F.L=0.675

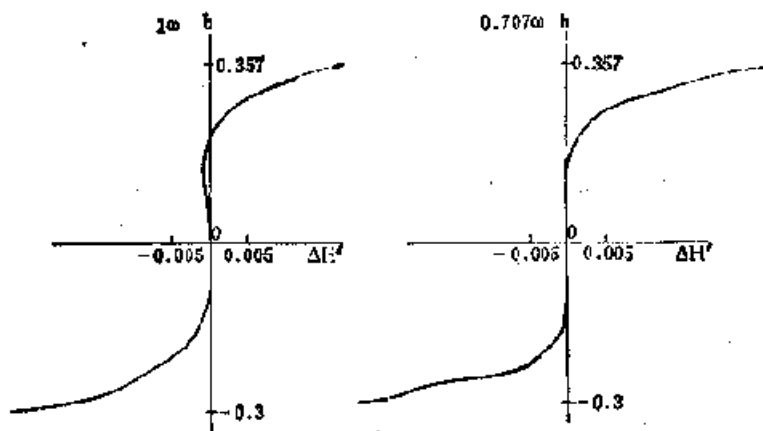
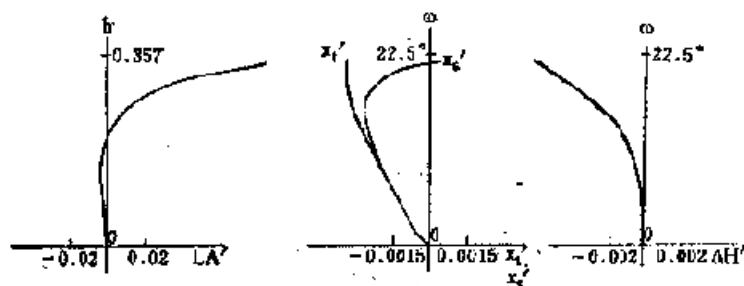
FN₀=1.4

F.A.=±22.5°



| 序号 | r | d | n _d | v _d | 序号 | r | d | n _d | v _d |
|----|---------|---------|----------------|----------------|----|----------|---------|----------------|----------------|
| 1 | 2.28020 | 0.03454 | 1.55150 | 45.17 | 7 | 0.25407 | 0.26861 | | |
| 2 | 0.47847 | 0.19570 | 1.62287 | 60.06 | 8 | -0.26903 | 0.02878 | 1.76846 | 26.78 |
| 3 | 2.15280 | 0.00192 | | | 9 | 5.17978 | 0.09977 | 1.78869 | 43.53 |
| 4 | 0.62001 | 0.10467 | 1.66151 | 50.69 | 10 | -0.35881 | 0.00005 | | |
| 5 | 1.21055 | 0.00192 | | | 11 | 8.20741 | 0.05372 | 1.78869 | 43.53 |
| 6 | 0.34612 | 0.09689 | 1.72732 | 29.07 | 12 | 0.77460 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|--------------|----------|-----------------|
| | -0.0039 | 0.0013 | 0.000021 | -0.0026 | -0.0025 | 0.41 | -1.4% |
| h 或 ω % | LA' | AH' | x'_e | x_e | $x'_i - x_e$ | K_{T1} | $K_{T1.7}$ |
| 100 | 0.089 | -0.0061 | -0.0036 | 0.000037 | -0.0036 | -0.30 | -0.013 |
| 70 | 0.0047 | -0.0017 | -0.0030 | -0.0028 | -0.00024 | -0.23 | -0.0056 |



1108399

编号: 01-00-009

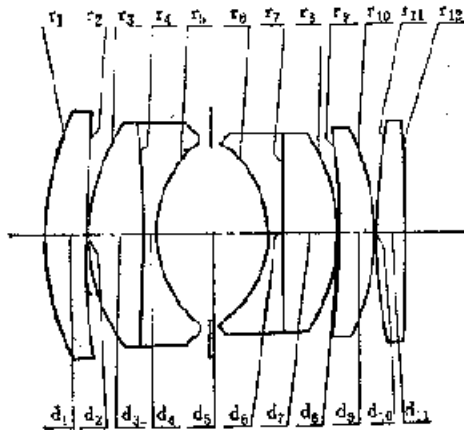
双 高 斯 型

E. F. L = 100

B. F. L = 71.06

FNo. = 1.4

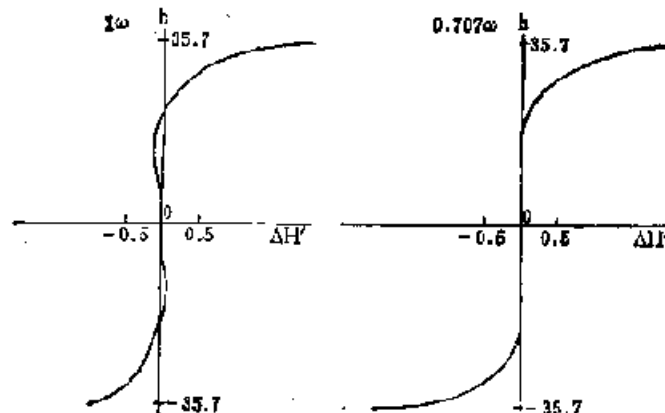
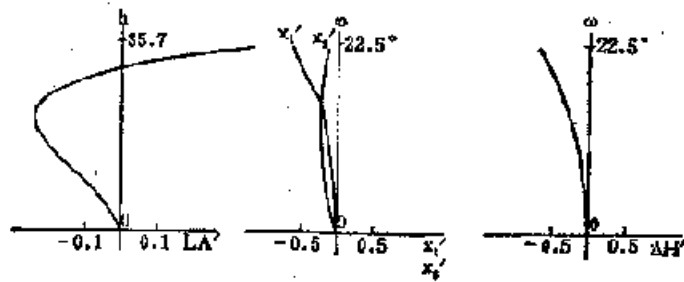
F. A. = $\pm 22.5^\circ$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|--------|---------|------|----|---------|-------|---------|------|
| 1 | 77.95 | 11.55 | 1.72342 | 37.9 | 7 | 577.29 | 15.18 | 1.734 | 51.3 |
| 2 | 263.05 | 0.19 | | | 8 | -46.53 | 0.35 | | |
| 3 | 52.07 | 15.78 | 1.72342 | 37.9 | 9 | -216.04 | 9.61 | 1.66672 | 48.3 |
| 4 | -327.13 | 3.46 | 1.71736 | 29.5 | 10 | -61.27 | 0.19 | | |
| 5 | 31.13 | 31.67* | | | 11 | 156.14 | 7.04 | 1.66672 | 48.3 |
| 6 | -29.94 | 3.66 | 1.71736 | 29.5 | 12 | -657.55 | | | |

$$31.67^* = 15.21 + 16.46$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HJ | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.311 | 0.327 | 0.670 | -0.263 | -0.477 | 41.432 | -1.675 |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.372 | -0.693 | -0.681 | -0.092 | -0.588 | 0.515 | 0.019 |
| 70 | -0.244 | -0.255 | -0.179 | -0.237 | -0.057 | -0.041 | 0.011 |



编号: 01-00-010

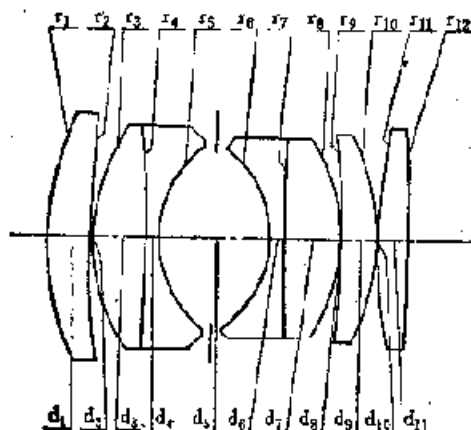
双 高 斯 型

E. F. L = 100

B. F. L = 73.42

FNo. = 1.4

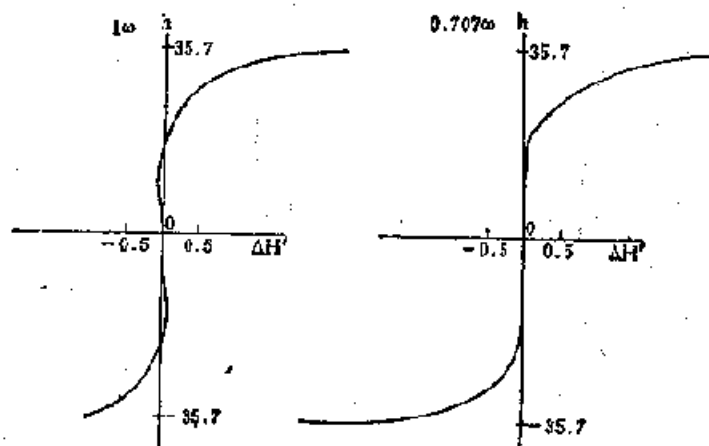
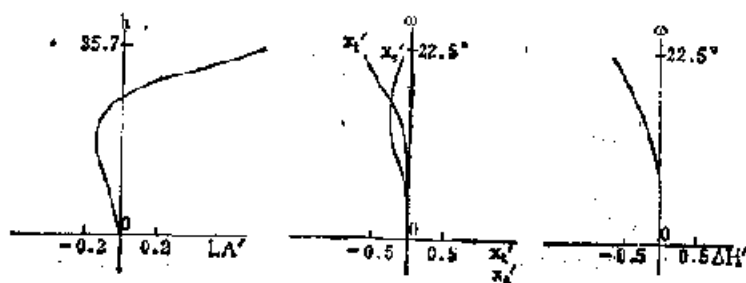
F. A. = $\pm 22.5^\circ$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|--------|---------|------|----|--------|-------|--------|------|
| 1 | 79.15 | 11.93 | 1.72342 | 37.9 | 7 | 1169.2 | 15.03 | 1.734 | 51.3 |
| 2 | 260.8 | 0.17 | | | 8 | -48.57 | 0.38 | | |
| 3 | 52.47 | 15.01 | 1.70151 | 41.1 | 9 | -248.0 | 8.81 | 1.6935 | 50.7 |
| 4 | -383.0 | 4.08 | 1.68893 | 31.0 | 10 | -62.62 | 0.17 | | |
| 5 | 51.1 | 30.41* | | | 11 | 204.7 | 6.32 | 1.6935 | 50.7 |
| 6 | -20.43 | 4.04 | 1.71735 | 29.5 | 12 | -428.9 | | | |

30.41* = 15.21 - 15.20

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.262 | 0.103 | 0.045 | -0.239 | -0.498 | 41.722 | -1.731 |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_2 - x'_1$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.837 | -0.722 | -0.654 | 0.007 | -0.662 | 0.55 | 0.080 |
| 70 | -0.075 | -0.268 | -0.186 | -0.199 | 0.013 | -0.008 | 0.100 |



编号: 01-00-011

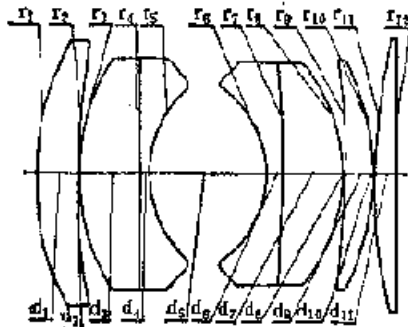
大孔径长工作截距摄影镜头

E.F.L=1

B.F.L=0.75

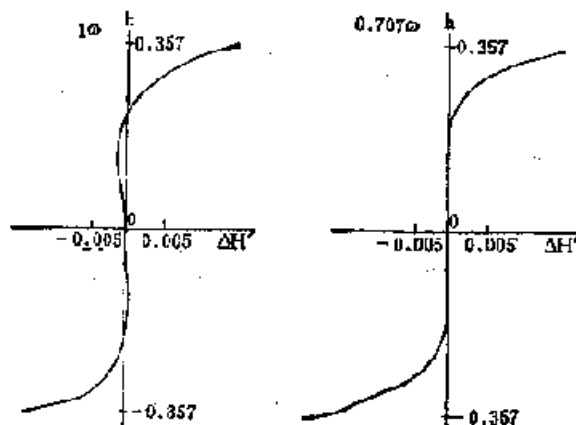
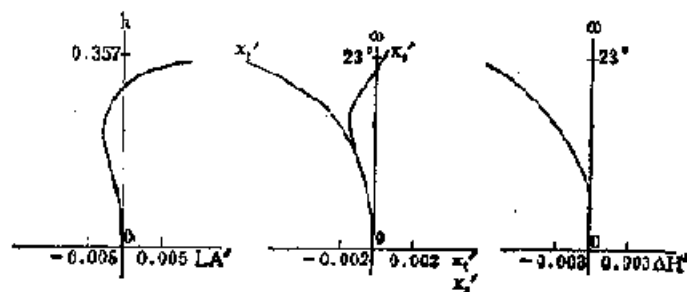
FNo. = 1.4

F.A. = +23°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|--------|---------|------|----|----------|--------|---------|------|
| 1 | 0.7853 | 0.1250 | 1.66446 | 35.9 | 7 | -3.8760 | 0.1647 | 1.71300 | 53.9 |
| 2 | 2.5053 | 0.0019 | | | 8 | -0.4535 | 0.0039 | | |
| 3 | 0.5735 | 0.1686 | 1.69350 | 53.4 | 9 | -2.3256 | 0.0833 | 1.67790 | 55.5 |
| 4 | 12.4041 | 0.0329 | 1.64831 | 33.8 | 10 | -0.9357 | 0.0019 | | |
| 5 | 0.3243 | 0.3256 | | | 11 | 1.5504 | 0.0620 | 1.71300 | 53.9 |
| 6 | -0.2892 | 0.0407 | 1.69895 | 30.1 | 12 | -13.8774 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|------------------|
| | -0.0035 | 0.00013 | 0.00052 | -0.0021 | -0.0057 | 0.42 | -2% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.0033 | -0.0086 | -0.0073 | 0.00079 | -0.0080 | 0.0019 | 0.000074 |
| 70 | -0.0027 | -0.0031 | -0.0020 | -0.00159 | -0.00040 | -0.0073 | -0.00061 |



编号: 01-00-012

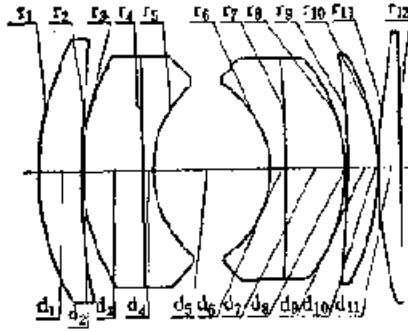
大孔径长工作截距摄影镜头

E.F.L=1

B.F.L=0.7442

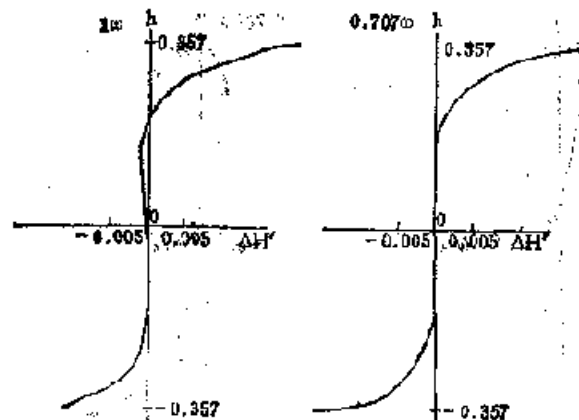
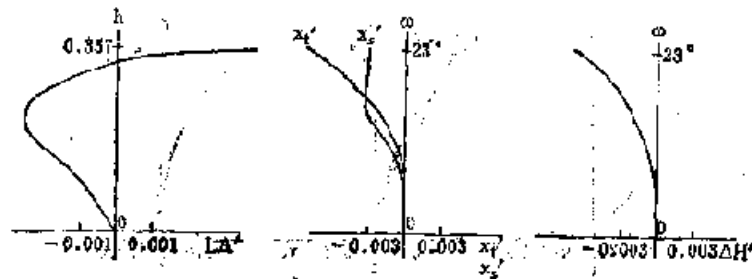
FNo. =1.4

F.A. = $\pm 23^\circ$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|--------|---------|------|----|---------|--------|--------|------|
| 1 | 0.8140 | 0.0930 | 1.7495 | 35.0 | 7 | -8.5727 | 0.1647 | 1.6779 | 53.5 |
| 2 | 2.0512 | 0.0019 | | | 8 | -0.4953 | 0.0058 | | |
| 3 | 0.5620 | 0.1202 | 1.744 | 44.9 | 9 | -2.3256 | 0.0969 | 1.713 | 53.9 |
| 4 | 2.7132 | 0.0659 | 1.69895 | 30.1 | 10 | -0.6610 | 0.0019 | | |
| 5 | 0.3341 | 0.3333 | | | 11 | 1.5891 | 0.0620 | 1.713 | 53.9 |
| 6 | -0.3227 | 0.0465 | 1.71736 | 29.5 | 12 | -8.9028 | | | |

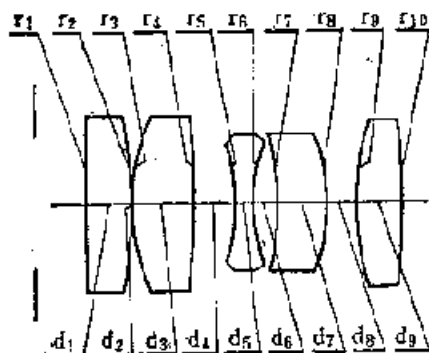
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|--------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.0031 | 0.00025 | 0.00076 | -0.0032 | -0.0050 | 0.42 | -1.5% |
| h ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.0043 | -0.0067 | -0.0064 | -0.0031 | -0.0053 | 0.0056 | 0.00011 |
| 70 | -0.0027 | -0.0026 | -0.0026 | -0.0035 | 0.00089 | 0.0016 | 0.00025 |



编号: 01-00-013

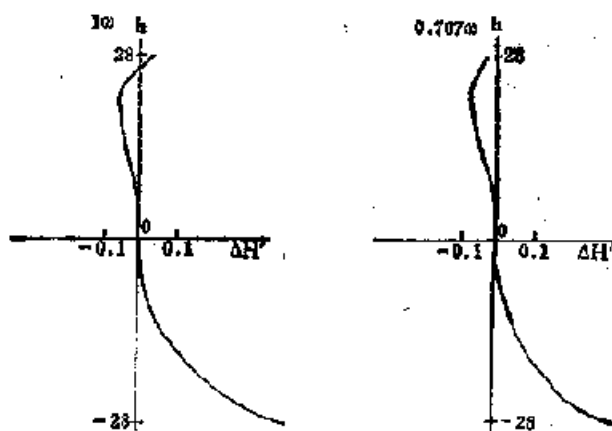
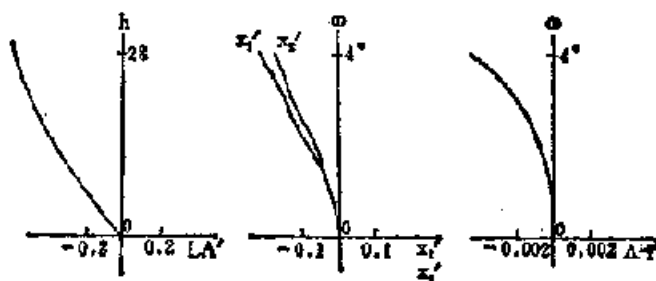
摄影或电影摄影物镜

E. F. L = 100 B. F. L = 44.7 FNo. = 1.8 F. A. = 8° $Lp'_1 = -18.9$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|----------|-------|------|------|----|---------|------|------|------|
| 1 | ∞ | 18.9* | | | 6 | 99.61 | 7.5 | | |
| 2 | 230.34 | 1.5 | 1.62 | 58.9 | 7 | -159.36 | 19.6 | 1.65 | 57.9 |
| 3 | 81.00 | 23.4 | 1.70 | 56.9 | 8 | -62.21 | 11.7 | | |
| 4 | -368.11 | 14.6 | | | 9 | 129.61 | 17.7 | 1.71 | 54.0 |
| 5 | -82.12 | 8.3 | 1.76 | 28.0 | 10 | -301.34 | | | |

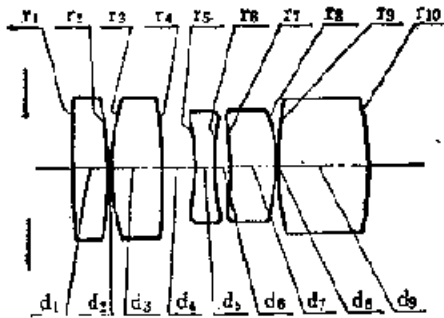
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.15 | 0.0073 | -0.0032 | -0.025 | -0.0025 | 7.0 | -0.085% |
| h 或 ω % | LA' | $\Delta H'$ | x'_c | x'_s | $x'_c - x'_s$ | K_{T1} | $K_{T1.7}$ |
| 100 | -0.61 | -0.0045 | -0.22 | -0.18 | -0.040 | 0.20 | 0.055 |
| 70 | -0.41 | -0.0016 | -0.11 | -0.09 | -0.020 | 0.13 | 0.036 |



编号: 01-00-014

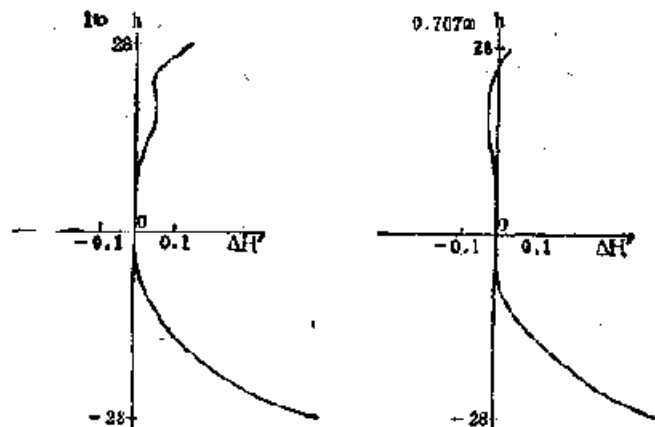
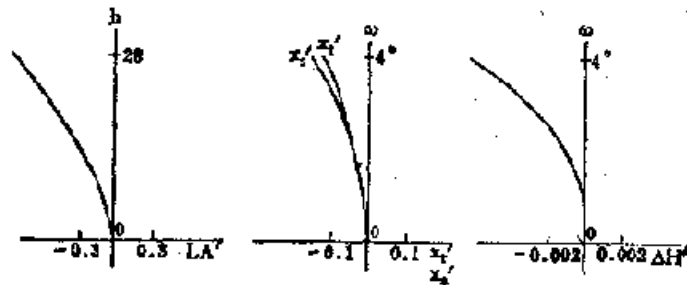
摄影或电影摄影物镜

E.F.L=100 B.F.L=46.2 FNo.=1.8 F.A.=8° $Lp'_1=-19.1$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|----------|-------|------|------|----|---------|------|------|------|
| - | | 19.1* | | | 6 | 98.83 | 7.6 | | |
| 1 | ∞ | 15.3 | 1.62 | 58.0 | 7 | -161.47 | 19.9 | 1.66 | 57.0 |
| 2 | -233.41 | 1.5 | | | 8 | -70.75 | 1.5 | | |
| 3 | 91.72 | 23.7 | 1.72 | 56.0 | 9 | 149.30 | 38.2 | 1.71 | 54.0 |
| 4 | -245.34 | 14.1 | | | 10 | -134.70 | | | |
| 5 | -83.21 | 8.4 | 1.76 | 28.0 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|------------------|
| | -0.18 | 0.029 | 0.0013 | -0.025 | -0.0036 | 7 | -0.093% |
| h 或 ω % | I.A' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.82 | -0.0065 | -0.13 | -0.15 | 0.019 | 0.35 | 0.12 |
| 70 | -0.52 | -0.0023 | -0.057 | -0.077 | 0.0092 | 0.24 | 0.084 |



编号: 01-00-015

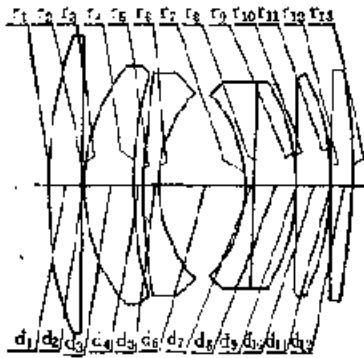
高斯型摄影物镜

E. F. L = 1.0

B. F. L = 0.6959

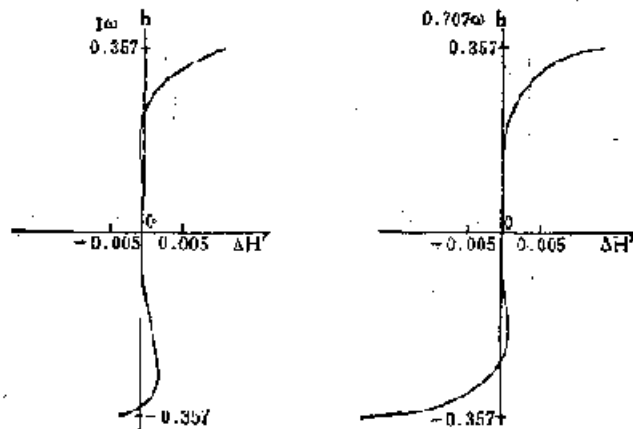
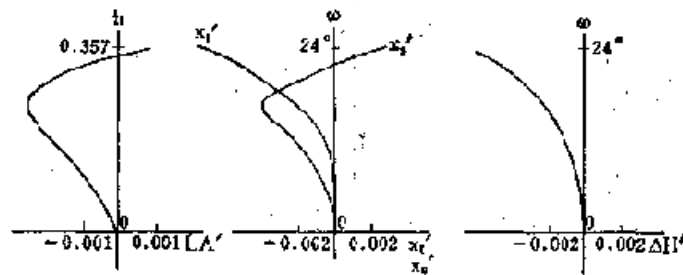
FNo. = 1.4

F. A. = $\pm 24^\circ$



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|-----------|--------|---------|-------|----|-----------|--------|---------|-------|
| 1 | 1.15720 | 0.1044 | 1.72055 | 47.69 | 8 | -7.84738 | 0.1149 | 1.78868 | 43.62 |
| 2 | -76.27345 | 0.0019 | | | 9 | -0.57576 | 0.0010 | | |
| 3 | 0.51319 | 0.1369 | 1.78868 | 43.62 | 10 | -12.43738 | 0.0829 | 1.74795 | 44.49 |
| 4 | 0.98070 | 0.0306 | | | 11 | -0.73012 | 0.0010 | | |
| 5 | 1.75657 | 0.0440 | 1.72313 | 29.30 | 12 | 9.06032 | 0.0565 | 1.74795 | 44.49 |
| 6 | 0.35550 | 0.2346 | | | 13 | -1.73148 | | | |
| 7 | -0.36599 | 0.0287 | 1.70120 | 25.00 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.0028 | 0.00045 | 0.0011 | -0.0050 | -0.0044 | 0.44 | -1.3% |
| h 或 ω % | L.A' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T1.7}$ |
| 100 | 0.00097 | -0.0060 | -0.0077 | 0.0029 | -0.010 | 0.0052 | 0.0020 |
| 70 | -0.0025 | -0.0025 | -0.0020 | -0.0040 | 0.00199 | -0.0027 | 0.00062 |



编号: 01-00-016

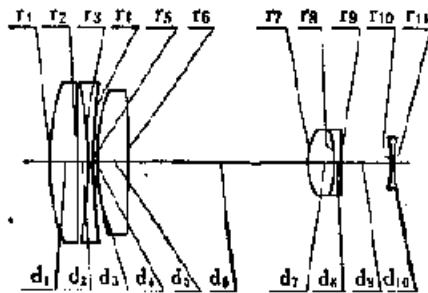
改进的珀兹伐物镜系统

E. F. L = 100

B. F. L =

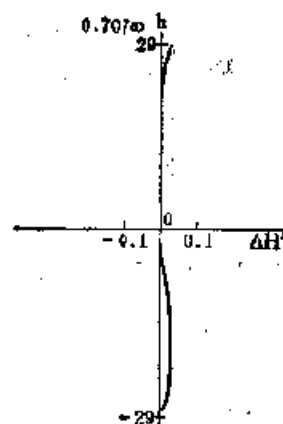
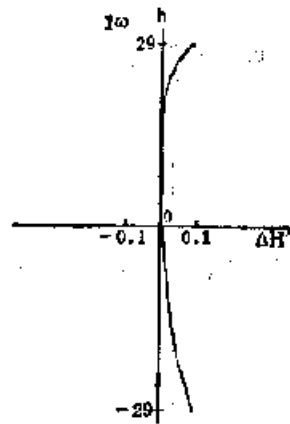
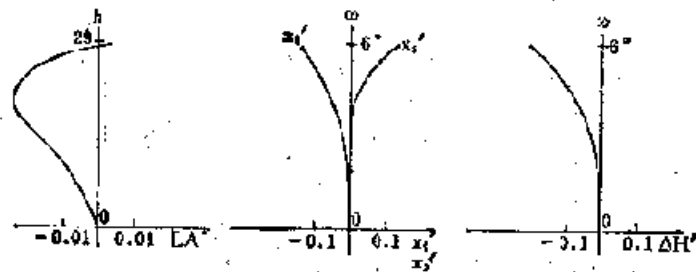
FNo. = 1.7

F. A. = 12°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|------|-------|------|----|-------|------|-------|------|
| 1 | 100.2 | 13.4 | 1.605 | 60.4 | 7 | 35.65 | 10.3 | 1.625 | 56.5 |
| 2 | 4070 | 4.26 | | | 8 | -57.7 | 2.71 | 1.702 | 56.3 |
| 3 | -196.2 | 4.57 | 1.792 | 25.9 | 9 | 201.5 | 21.8 | | |
| 4 | 498.5 | 1.3 | | | 10 | -72.2 | 1.55 | 1.813 | 25.2 |
| 5 | 112.0 | 13.7 | 1.625 | 56.6 | 11 | 64.7 | | | |
| 6 | 3190 | 80.5 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.015 | -0.00026 | -0.0117 | 0.0095 | -0.11 | 10.53 | -1.0% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.0030 | -0.20 | -0.13 | 0.013 | -0.14 | 0.077 | 0.037 |
| 70 | -0.024 | -0.071 | -0.071 | 0.000029 | -0.071 | 0.015 | 0.0096 |



编号: 01-00-017

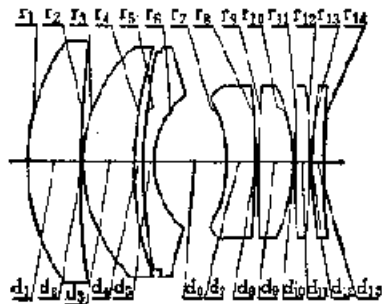
摄影镜头

E. F. L = 100.0

B. F. L =

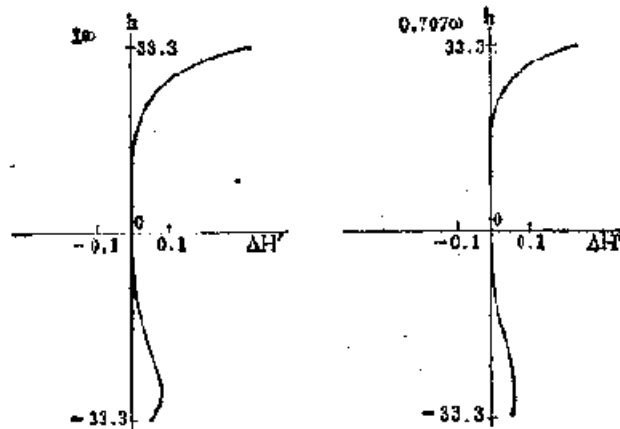
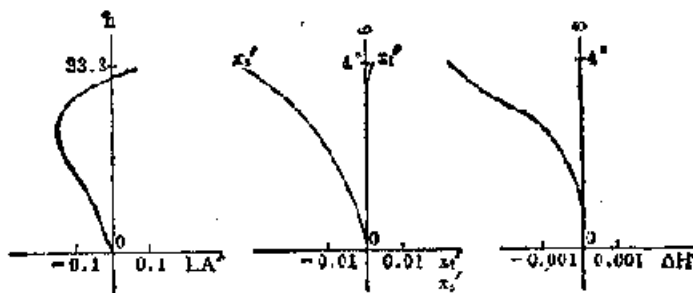
FNo. = 1.5

F. A. = 8°



| 序号 | r | d | n _d | v _d | 序号 | r | d | n _d | v _d |
|----|--------|------|----------------|----------------|----|---------|------|----------------|----------------|
| 1 | 61.02 | 15.2 | 1.677955.5 | | 8 | -252.98 | 1.1 | | |
| 2 | 331.2 | 0.07 | | | 9 | 482.12 | 9.8 | 1.6779 | 55.5 |
| 3 | 42.13 | 14.1 | 1.677955.5 | | 10 | -52.31 | 0.1 | | |
| 4 | 94.96 | 2.8 | | | 11 | 260.23 | 4.8 | 1.6676 | 41.9 |
| 5 | 166.14 | 3.4 | 1.699030.1 | | 12 | -128.78 | 0.07 | | |
| 6 | 25.03 | 20.4 | | | 13 | 134.14 | 4.0 | 1.6668 | 33.1 |
| 7 | -37.40 | 7.1 | 1.721529.3 | | 14 | 316.45 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | III | QP(1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.139 | 0.019 | 0.0339 | -0.011 | 0.0023 | 7.0 | -0.052% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.065 | -0.0036 | 0.00139 | -0.033 | 0.034 | 0.20 | 0.055 |
| 70 | -0.15 | -0.0012 | 0.00059 | -0.0169 | 0.017 | 0.14 | 0.039 |



编号: 01-00-018

光 学 物 镜

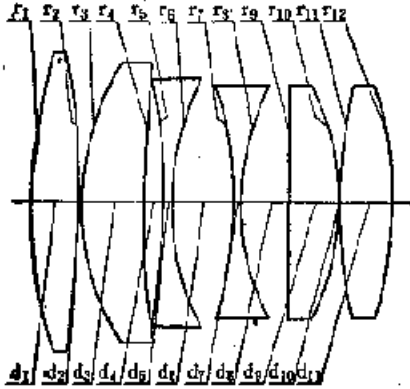
E. F. L = 100

B. F. L = 53.32

FNo. = 1.2

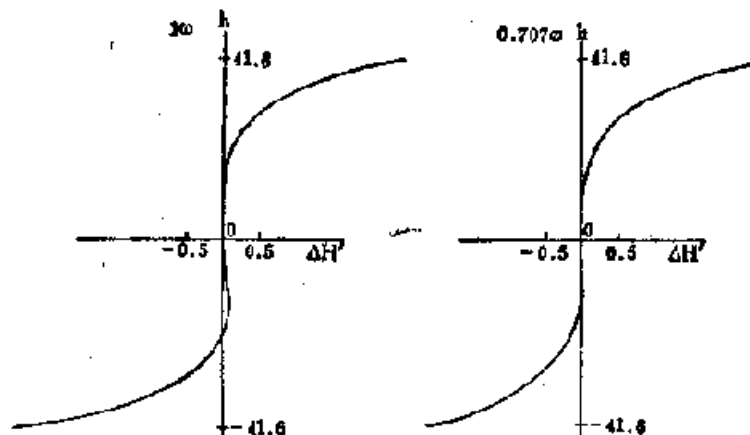
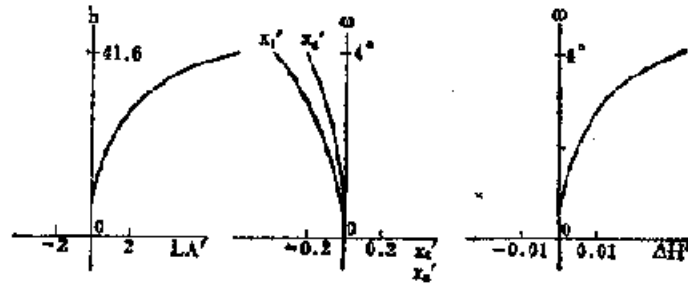
F. A. = 8°

$Lp'_8 = 7$



| 序号 | r | d | n_D | v | 序号 | r | d | n_D | v |
|----|---------|-------|--------|-------|----|---------|-------|--------|------|
| 1 | 140.80 | 18.32 | 1.6906 | 54.00 | 7 | -107.09 | 2.82 | 1.6985 | 30.2 |
| 2 | -248.94 | 0.35 | | | 8 | 73.62 | 13.39 | | |
| 3 | 70.45 | 18.32 | 1.6906 | 54.00 | 9 | 462.87 | 14.09 | 1.6909 | 54.8 |
| 4 | 281.81 | 5.78 | | | 10 | -73.27 | 0.35 | | |
| 5 | -176.13 | 2.82 | 1.6985 | 30.2 | 11 | 160.00 | 14.09 | 1.6909 | 54.8 |
| 6 | 75.81 | 17.61 | | | 12 | -103.99 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1m) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | 0.73 | 0.051 | -0.026 | -0.039 | 0.028 | 7.4 | 0.46% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{F1} | $K'_{70.7}$ |
| 100 | 8.7 | 0.03 | -0.40 | -0.21 | -0.18 | -0.44 | 0.065 |
| 70 | 2.1 | 0.012 | -0.19 | -0.10 | -0.089 | -0.34 | 0.037 |



编号: 01-00-019

光 学 物 镜

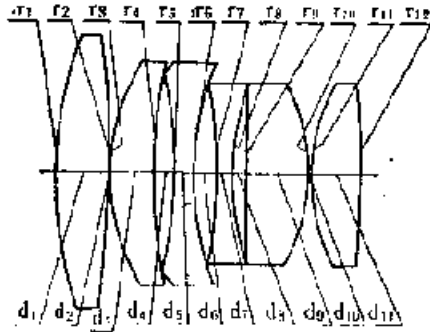
E. F. L = 100

B. F. L = 54.14

FNo. = 0.95

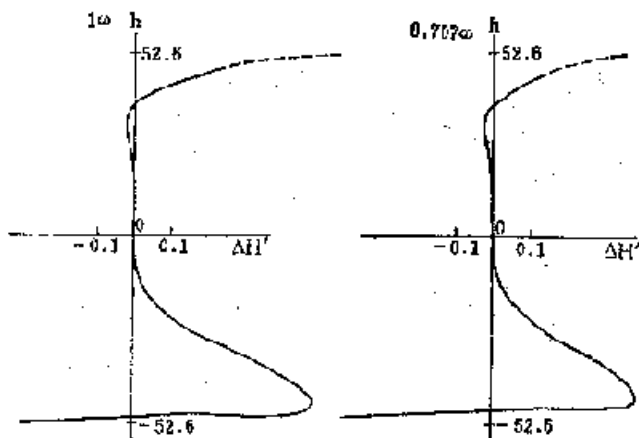
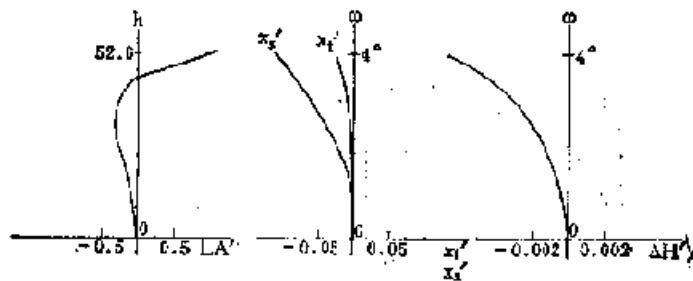
F. A. = 8°

Lp's = 2.5



| 序号 | r | d | n _D | v | 序号 | r | d | n _D | v |
|----|---------|-------|----------------|------|----|---------|-------|----------------|------|
| 1 | 210.83 | 21.91 | 1.7439 | 44.9 | 7 | -302.07 | 8.80 | 1.7877 | 25.5 |
| 2 | -585.34 | 0.91 | | | 8 | 125.41 | 5.61 | | |
| 3 | 91.74 | 21.91 | 1.7139 | 53.8 | 9 | 572.45 | 28.05 | 1.6966 | 55.8 |
| 4 | 368.19 | 8.49 | | | 10 | -86.44 | 0.91 | | |
| 5 | -200.17 | 8.80 | 1.7877 | 25.5 | 11 | 86.44 | 20.17 | 1.6966 | 55.8 |
| 6 | 122.07 | 10.24 | | | 12 | -505.57 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.56 | 0.037 | 0.024 | -0.086 | -0.0070 | 7 | -0.097% |
| b 或 ω % | LA' | AH' | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | 1.1 | -0.0068 | -0.022 | -0.109 | 0.087 | 0.26 | 0.19 |
| 70 | -0.34 | -0.0024 | -0.011 | -0.055 | 0.044 | 0.19 | 0.13 |



编号: 01-00-020

高速摄影机物镜

E. F. L = 100

B. F. L = 60.64

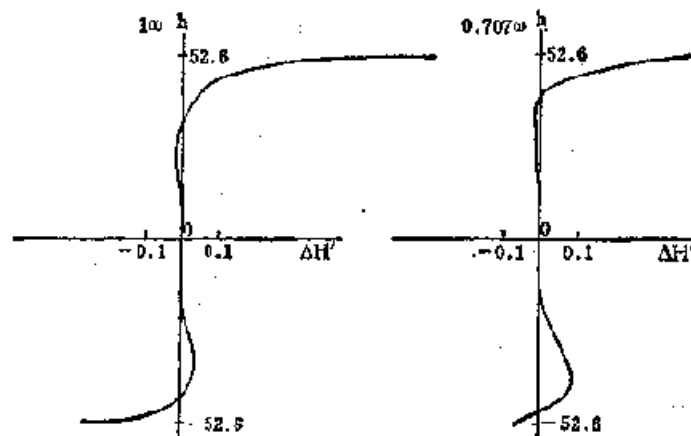
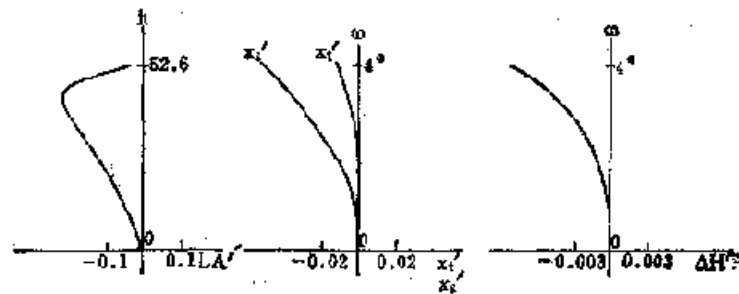
FNo. = 0.95

F. A. = 8'



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|----------|-------|---------|-------|----|---------|-------|---------|-------|
| 1 | 159.55 | 16.35 | 1.62287 | 60.1 | 9 | -39.25 | 4.48 | 1.76846 | 26.8 |
| 2 | 3663.75 | 0.19 | | | 10 | 478.43 | 28.42 | 1.71615 | 53.7 |
| 3 | 229.09 | 10.32 | 1.66104 | 57.1 | 11 | -57.62 | 0.19 | | |
| 4 | 697.77 | 6.23 | | | 12 | 317.71 | 17.52 | 1.59142 | 61.0 |
| 5 | ∞ | 8.37 | 1.58482 | 40.6 | 13 | -116.06 | 0.19 | | |
| 6 | 597.26 | 0.19 | | | 14 | 94.69 | 16.53 | 1.69400 | 54.6 |
| 7 | 57.82 | 20.05 | 1.79180 | 25.9 | 15 | 509.65 | | | |
| 8 | 39.05 | 36.21 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.35 | 0.023 | 0.011 | -0.042 | -0.0086 | 7.0 | -0.11% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.048 | -0.0032 | -0.013 | -0.054 | 0.040 | 0.22 | 0.041 |
| 70 | -0.21 | -0.0029 | -0.0065 | -0.027 | 0.020 | 0.17 | 0.029 |



编号: 01-00-021

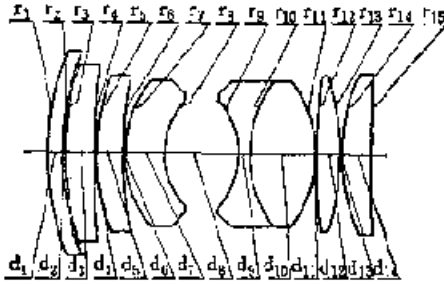
高速摄影机物镜

E. F. L = 100

B. F. L = 57.28

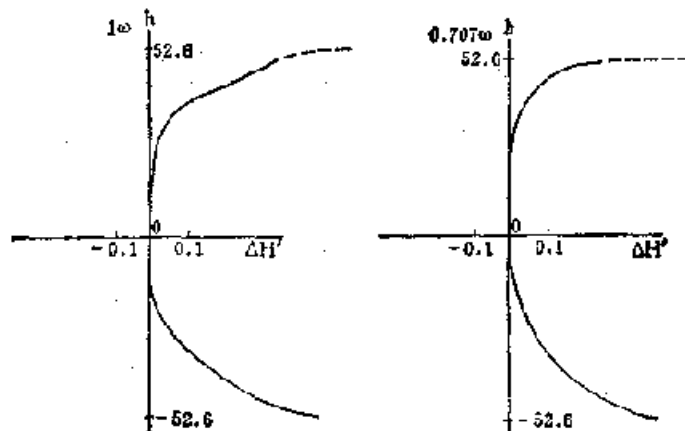
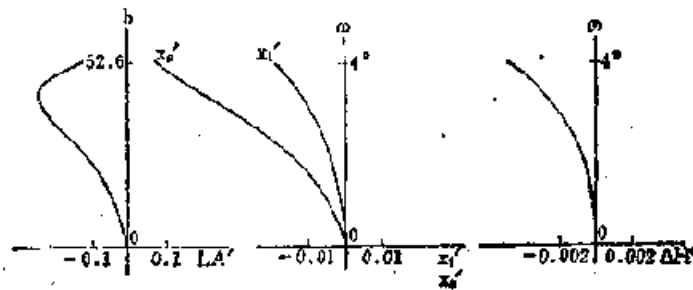
FNo. = 0.95

F. A. = 8°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|---------|-------|----|---------|-------|---------|-------|
| 1 | 142.70 | 8.72 | 1.67245 | 44.7 | 9 | -44.42 | 6.10 | 1.74703 | 27.8 |
| 2 | 130.17 | 0.44 | | | 10 | 71.19 | 37.93 | 1.73692 | 50.8 |
| 3 | 139.32 | 17.44 | 1.62541 | 56.6 | 11 | -71.19 | 0.44 | | |
| 4 | 540.20 | 0.44 | | | 12 | 399.00 | 12.08 | 1.71615 | 53.7 |
| 5 | 114.51 | 15.89 | 1.62287 | 60.1 | 13 | -149.56 | 0.44 | | |
| 6 | 282.81 | 0.44 | | | 14 | 94.54 | 15.09 | 1.71615 | 53.7 |
| 7 | 66.70 | 20.92 | 1.74703 | 27.8 | 15 | 649.28 | | | |
| 8 | 39.28 | 40.54 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.26 | 0.034 | 0.010 | -0.042 | -0.0052 | 7.0 | -0.076% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.15 | -0.0049 | -0.018 | 0.057 | 0.038 | 0.71 | 0.11 |
| 70 | -0.21 | -0.0017 | -0.0050 | 0.028 | 0.019 | 0.49 | 0.085 |



编号: 01-00-022

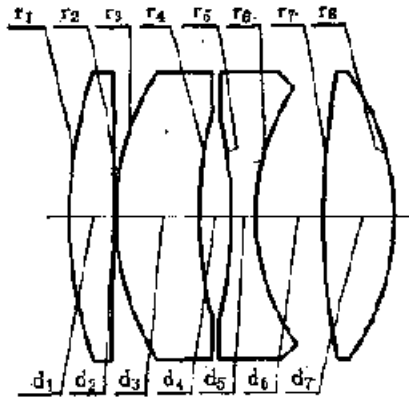
用于电影摄影的大孔径物镜

E. F. L = 100

B. F. L =

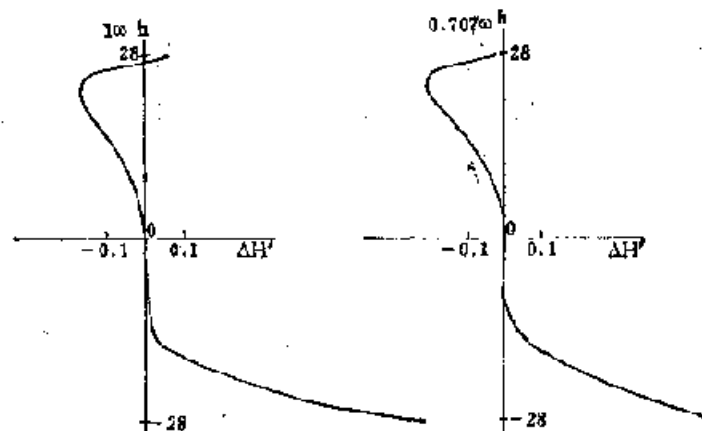
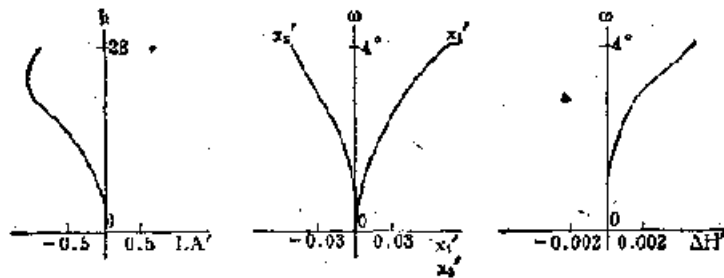
FNo. = 1.8

F. A. = 5°



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|---------|-------|---------|------|----|--------|-------|---------|------|
| 1 | 89.19 | 8.95 | 1.61375 | 56.3 | 5 | -97.68 | 5.18 | 1.71736 | 29.5 |
| 2 | -521.30 | 0.09 | | | 6 | 42.24 | 12.39 | | |
| 3 | 51.25 | 15.48 | 1.62041 | 60.3 | 7 | 173.49 | 12.59 | 1.62041 | 60.3 |
| 4 | 96.35 | 5.51 | | | 8 | -45.47 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|------------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.26 | -0.035 | 0.010 | -0.018 | 0.0027 | 7.0 | 0.071% |
| h 或 ω % | LA' | $\Delta H'$ | x_1' | x_2' | $x_4' - x_1'$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.93 | 0.0049 | 0.079 | -0.052 | 0.13 | 0.42 | 0.01 |
| 70 | -0.89 | 0.0017 | 0.039 | -0.026 | 0.066 | 0.29 | 0.0087 |



编号: 01-00-023

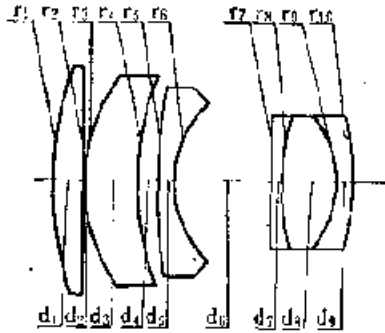
摄影物镜

E. F. L-1.0

B. F. L=0.591

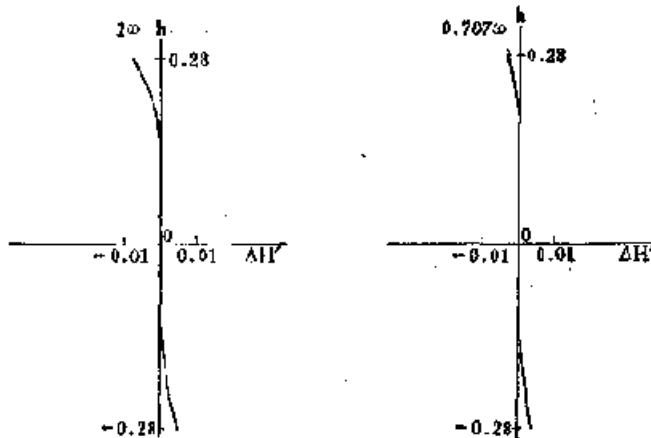
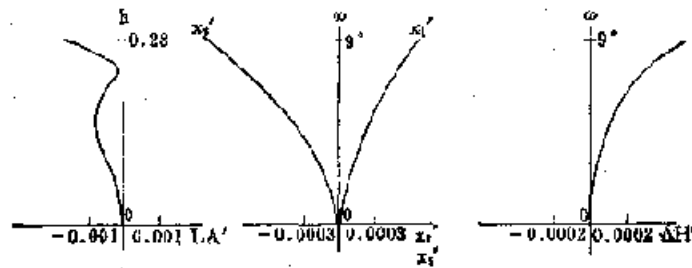
FNo. =1.8

F. A. =18°



| 序号 | r | d | n _d | v | 序号 | r | d | n _d | v |
|----|--------|--------|----------------|-------|----|---------|--------|----------------|-------|
| 1 | 0.72 | 0.0706 | 1.6031 | 65.6 | 6 | 0.2355 | 0.2134 | | |
| 2 | ∞ | 0.002 | | | 7 | 12.51 | 0.0222 | 1.57492 | 41.5 |
| 3 | 0.3782 | 0.1275 | 1.75496 | 53.4 | 8 | 0.5492 | 0.1242 | 1.68609 | 53.5 |
| 4 | 0.6396 | 0.0456 | | | 9 | -0.2136 | 0.0315 | 1.62039 | 60.35 |
| 5 | 1.733 | 0.0395 | 1.71749 | 29.55 | 10 | -0.8032 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1∞) |
|---------|--------------|--------------|----------------|----------------|-------------------------------------|-----------------|-------------------|
| | -0.00086 | -0.000080 | 0.00016 | -0.00039 | 0.00031 | 0.16 | 0.34% |
| h 或 ω % | LA' | ΔH' | x _t | x _u | x _t ' - x _u ' | K _{T1} | K _{T0.7} |
| 100 | -0.0016 | 0.00054 | 0.000648 | -0.0011 | 0.0017 | -0.0018 | 0.000057 |
| 70 | -0.00071 | 0.00019 | 0.00024 | -0.00064 | 0.00099 | -0.00048 | 0.000099 |



编号: 01-00-024

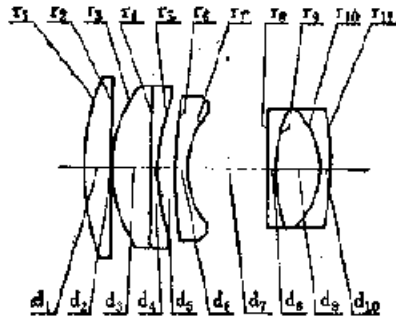
摄影物镜

E.F.L=1.0

B.F.L=0.501

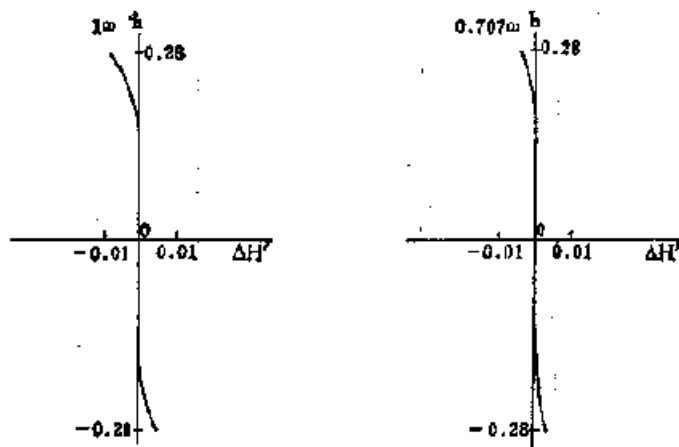
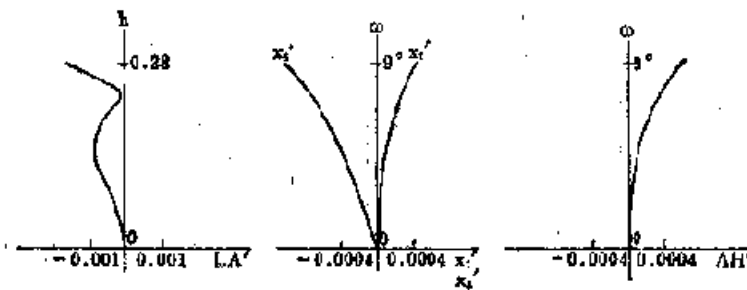
FNo. =1.8

F.A. =18°



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|----------|--------|---------|-------|----|---------|--------|---------|-------|
| 1 | 0.7431 | 0.0706 | 1.61720 | 54.04 | 7 | 0.2348 | 0.2193 | | |
| 2 | ∞ | 0.002 | | | 8 | 13.83 | 0.0222 | 1.57492 | 41.5 |
| 3 | 0.3768 | 0.1073 | 1.74400 | 44.9 | 9 | 0.5524 | 0.1242 | 1.68609 | 53.5 |
| 4 | ∞ | 0.0202 | 1.72151 | 29.28 | 10 | -0.2136 | 0.0298 | 1.62039 | 60.35 |
| 5 | 0.6754 | 0.0456 | | | 11 | -0.8193 | | | |
| 6 | 1.898 | 0.0393 | 1.63893 | 31.15 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.00083 | -0.000077 | 0.00014 | -0.00035 | 0.000329 | 0.15 | 0.36% |
| h 或 ω % | LA' | $\Delta H'$ | x'_i | x'_i | $x'_i - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.00359 | 0.00057 | 0.00040 | -0.0010 | 0.0014 | -0.0016 | 0.000089 |
| 70 | -0.00065 | 0.00020 | 0.00021 | -0.00009 | 0.00031 | -0.00035 | 0.00011 |



编号: 01-00-025

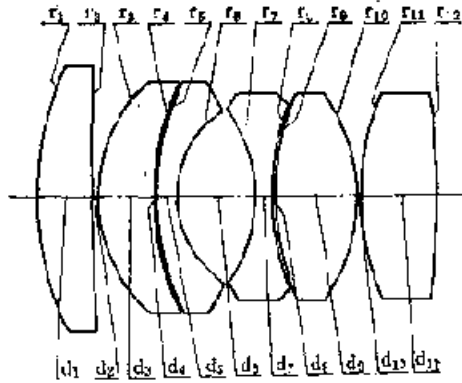
六片式物镜

E.F.L=1

B.F.L=0.46

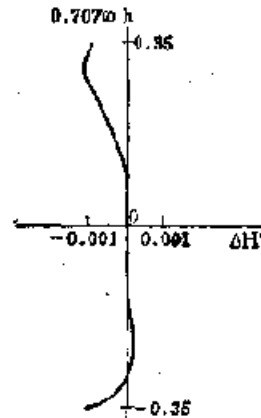
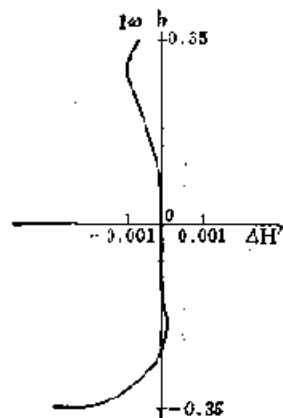
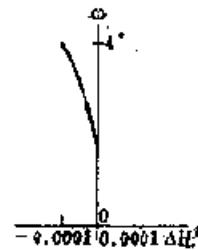
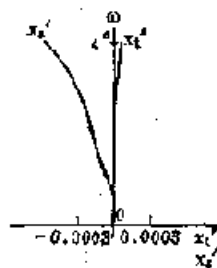
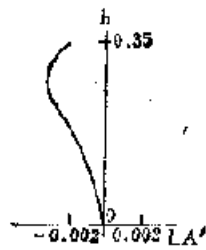
FNo. =1.4

F.A. =8°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|-------|-------|----------------|----------------|----|--------|-------|----------------|----------------|
| 1 | 0.832 | 0.15 | 1.73 | 51.0 | 7 | -0.396 | 0.055 | 1.59 | 31.0 |
| 2 | 4.92 | 0.02 | | | 8 | 0.736 | 0.002 | | |
| 3 | 0.403 | 0.16 | 1.49 | 57.0 | 9 | 0.774 | 0.22 | 1.49 | 57.0 |
| 4 | 0.766 | 0.004 | | | 10 | -0.470 | 0.009 | | |
| 5 | 0.766 | 0.055 | 1.59 | 31.0 | 11 | 0.744 | 0.21 | 1.70 | 56.0 |
| 6 | 0.275 | 0.21 | | | 12 | -2.01 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|------------------------|--------------|--------------|--------------|--------------|--------------|---------|-------------|
| | -0.0021 | -0.000093 | 0.000085 | -0.00023 | -0.000078 | 0.07 | -0.16% |
| λ 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x_t - x'_s$ | K'_T | $K'_{T0.7}$ |
| 100 | -0.0019 | -0.00011 | 0.000062 | -0.00058 | 0.00065 | -0.0017 | -0.00040 |
| 70 | -0.0031 | -0.000039 | 0.000013 | -0.00029 | 0.00033 | -0.0012 | -0.00030 |



编号: 01-00-026

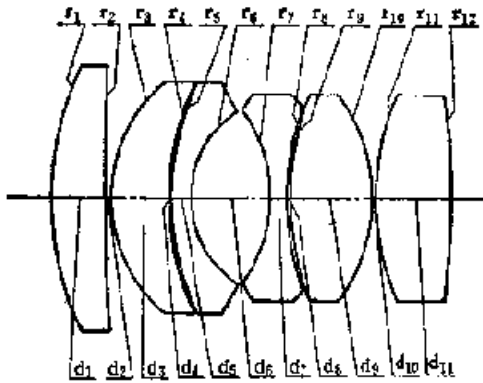
六片式物镜

E.F.L=1

B.F.L=0.49

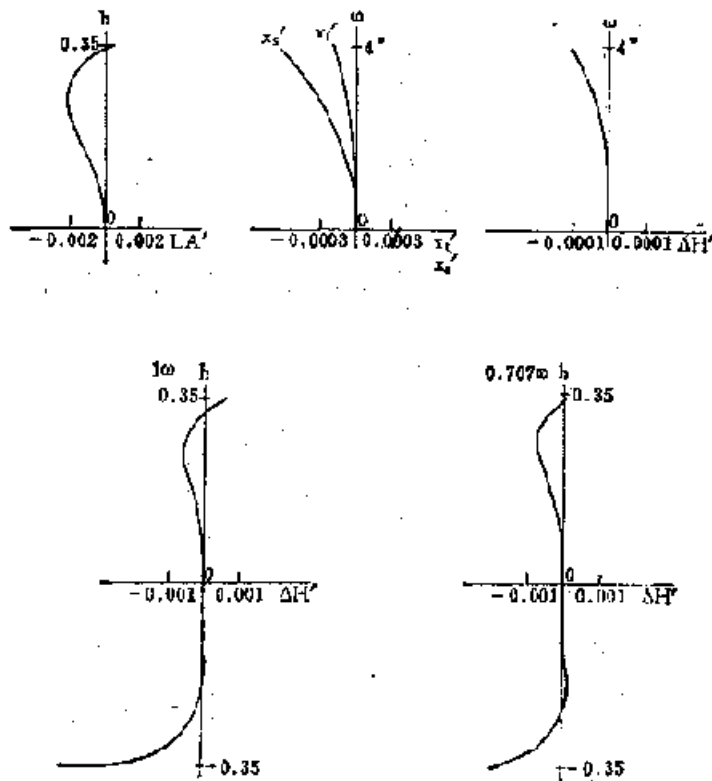
FNo. =1.4

F.A. =8°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|-------|-------|----------------|----------------|----|--------|-------|----------------|----------------|
| 1 | 0.829 | 0.15 | 1.73 | 51.0 | 7 | -0.373 | 0.055 | 1.57 | 33.0 |
| 2 | 4.35 | 0.015 | | | 8 | 0.799 | 0.004 | | |
| 3 | 0.424 | 0.16 | 1.49 | 57.0 | 9 | 0.983 | 0.22 | 1.49 | 57.0 |
| 4 | 1.66 | 0.004 | | | 10 | -0.452 | 0.01 | | |
| 5 | 1.42 | 0.065 | 1.57 | 33.0 | 11 | 0.772 | 0.21 | 1.70 | 56.0 |
| 6 | 0.282 | 0.21 | | | 12 | -1.96 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HT | QP(100) |
|--------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| | -0.0017 | -0.00014 | 0.000062 | -0.00022 | -0.000073 | 0.069 | -0.15% |
| h 或 ω% | LA' | ΔH' | x'_t | x'_s | x'_t - x'_s | K _{T1} | K _{T0.7} |
| 100 | 0.00043 | -0.00010 | -0.00019 | -0.00063 | 0.00044 | -0.0016 | -0.00045 |
| 70 | -0.0022 | -0.000037 | -0.000084 | -0.00032 | 0.00023 | -0.0011 | -0.00053 |



编号: 01-00-027

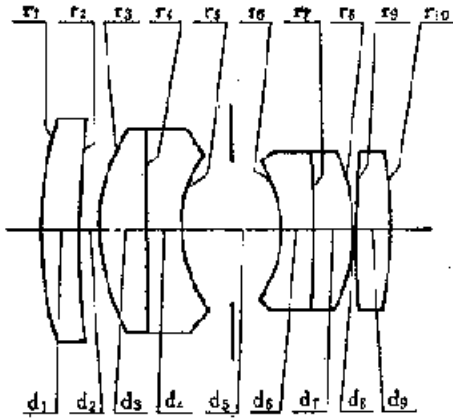
高斯型摄影物镜

E. F. L = 100

B. F. L = 61.56

FNo. = 1.8

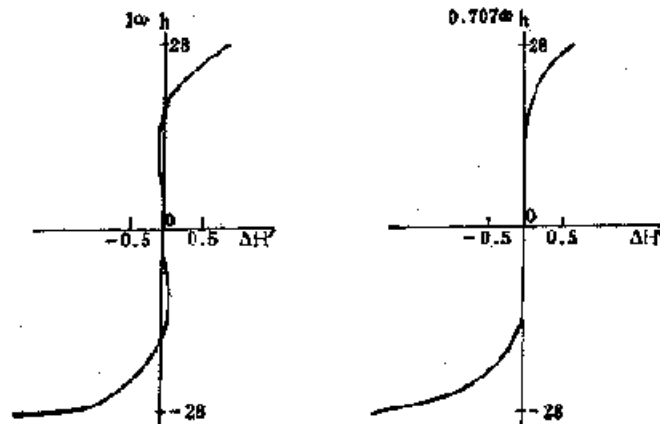
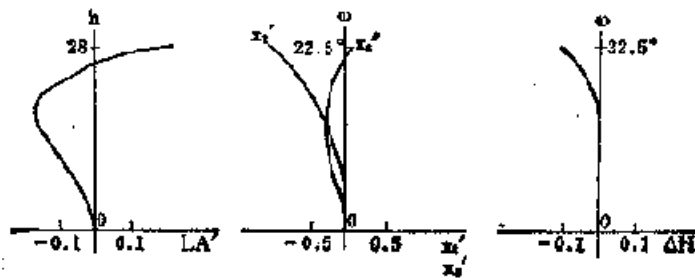
F. A. = 45°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|----------|--------|-------|-------|----|----------|------|-------|-------|
| 1 | 75.20 | 9.00 | 1.720 | 47.5 | 6 | -28.72 | 7.0 | 1.605 | 38.0 |
| 2 | 271.65 | 4.03 | | | 7 | -1023.62 | 8.97 | 1.657 | 57.2 |
| 3 | 42.71 | 10.59 | 1.720 | 42.0 | 8 | -39.66 | 0.1 | | |
| 4 | ∞ | 7.91 | 1.720 | 29.3 | 9 | 220.67 | 7.97 | 1.691 | 54.3 |
| 5 | 27.56 | 22.02* | | | 10 | -93.18 | | | |

22.02* = 11.01 + 11.01

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | Hl | QP(1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.11 | -0.0045 | 0.035 | -0.19 | 0.046 | 41.41 | -0.25% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.22 | -0.10 | -1.19 | 0.1 | -1.30 | -0.39 | -0.028 |
| 70 | -0.16 | 0.00082 | -0.39 | -0.28 | -0.11 | -0.63 | -0.082 |



编号: 01-00-028

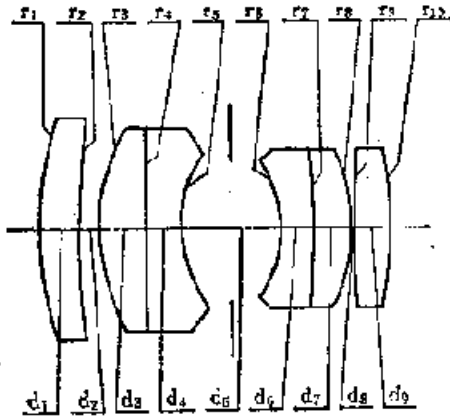
高斯型摄影物镜

E. F. L = 100

B. F. L = 63.38

FNo. = 1.8

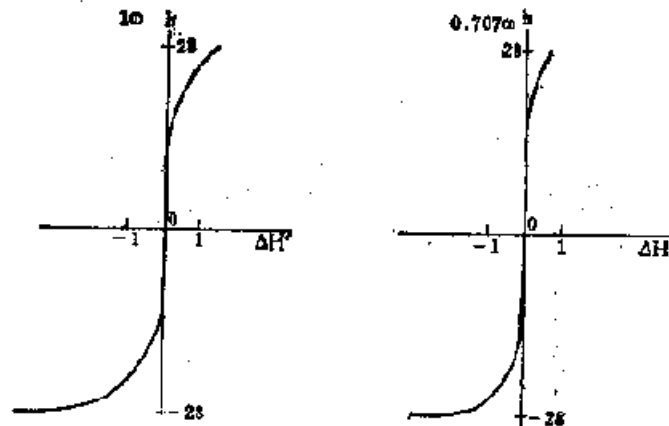
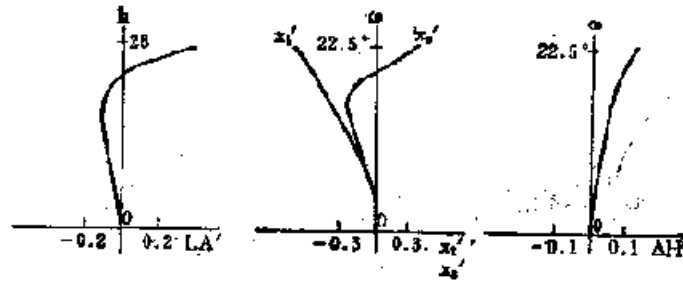
F. A. = 45°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|----------|--------|-------|-------|----|----------|------|-------|-------|
| 1 | 75.46 | 9.01 | 1.744 | 45.5 | 6 | -32.90 | 7.01 | 1.689 | 30.9 |
| 2 | 273.87 | 0.10 | | | 7 | ∞ | 9.02 | 1.744 | 45.6 |
| 3 | 42.52 | 16.55 | 1.720 | 42.0 | 8 | -45.22 | 0.10 | | |
| 4 | ∞ | 2.0 | 1.720 | 29.3 | 9 | 250.96 | 8.02 | 1.720 | 47.5 |
| 5 | 28.19 | 18.01* | | | 10 | -109.45 | | | |

$$18.01^* = 9.76 + 8.25$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | H1 | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.10 | -0.0057 | 0.014 | -0.18 | 0.12 | 41.41 | 0.29% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_3 - x'_4$ | K_{T1} | $K_{T1.7}$ |
| 100 | 0.39 | 0.12 | -0.67 | 0.33 | -1.01 | -1.39 | -0.15 |
| 70 | -0.12 | 0.063 | -0.38 | -0.25 | -0.13 | -1.03 | -0.14 |



编号: 01-00-029

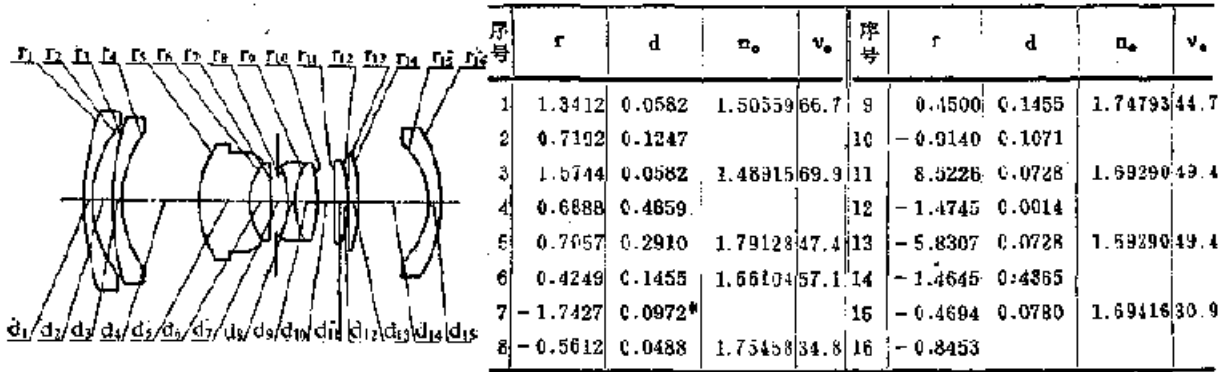
广 角 镜 头

E.F.L=1.0

B.F.L=0.47

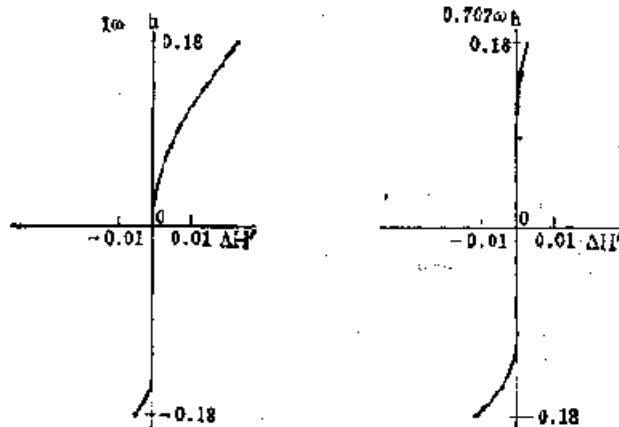
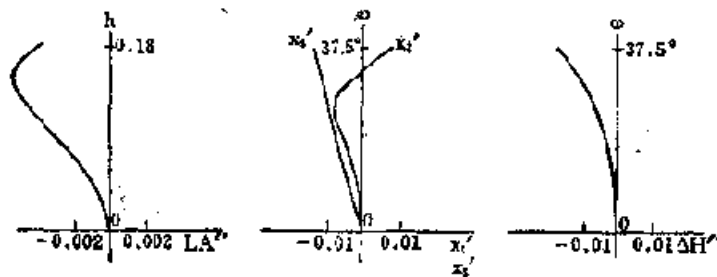
FNo. =2.8

F.A. =75°



0.0972* = 0.0486 + 0.0486

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | $Q^2(1\omega)$ |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|----------------|
| | -0.00077 | -0.00036 | -0.00033 | 0.0012 | 0.0049 | 0.76 | -2.11% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.0041 | -0.016 | 0.0077 | -0.013 | 0.020 | 0.0093 | -0.0053 |
| 70 | -0.0047 | -0.0061 | -0.0035 | -0.011 | 0.0020 | -0.0033 | -0.00033 |



编号: 01-00-030

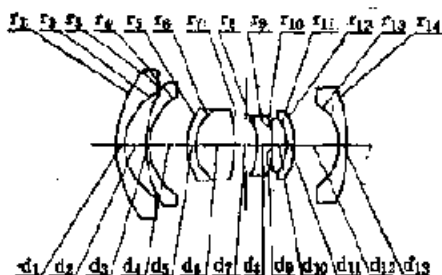
广 角 镜 头

E. F. L = 1.0

B. F. L = 0.50

FNo. = 2.8

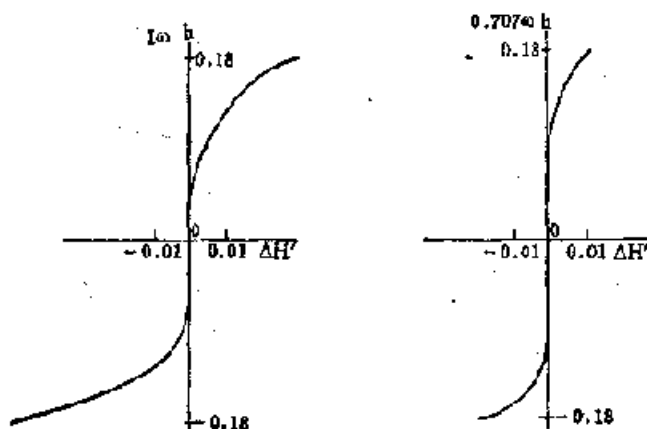
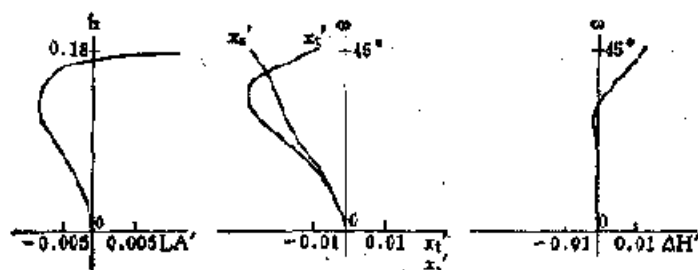
F. A. = 90°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|-----------|-----------|---------|------|----|-----------|----------|---------|------|
| 1 | 1.024083 | 0.056881 | 1.51871 | 64.0 | 8 | -0.825459 | 0.152294 | 1.79128 | 47.2 |
| 2 | 0.513349 | 0.181193 | | | 9 | -0.981422 | 0.001835 | | |
| 3 | 0.374908 | 0.056422 | 1.51871 | 64.0 | 10 | 4.178945 | 0.139450 | 1.62541 | 56.6 |
| 4 | 0.523898 | 0.348165 | | | 11 | -0.388908 | 0.049541 | 1.80156 | 28.2 |
| 5 | 0.738716 | 0.080734 | 1.79128 | 47.2 | 12 | 0.684312 | 0.417431 | | |
| 6 | 0.413578 | 0.351835 | 1.62303 | 60.1 | 13 | -0.460367 | 0.079358 | 1.62303 | 60.1 |
| 7 | -1.312523 | 0.202752* | | | 14 | -1.740872 | | | |

$$0.202752^* = 0.100000 + 0.102752$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(10) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.0015 | 0.00040 | 0.0011 | 0.00075 | 0.0019 | 1.00 | 1.35% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.012 | 0.013 | -0.0085 | -0.026 | 0.017 | -0.014 | -0.0042 |
| 70 | -0.0085 | -0.00091 | -0.028 | -0.017 | -0.011 | -0.0036 | -0.00026 |



编号: 01-00-031

四 组 元 物 镜

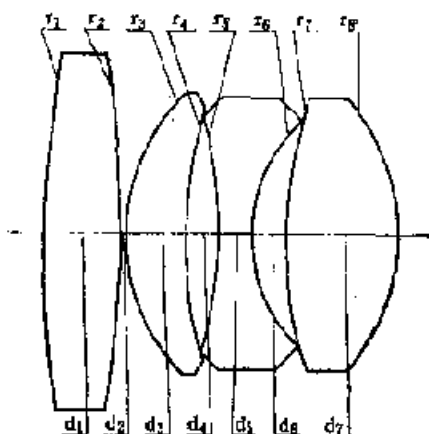
E. F. L = 100

B. F. L = 59.39

FN₀ = 1.4

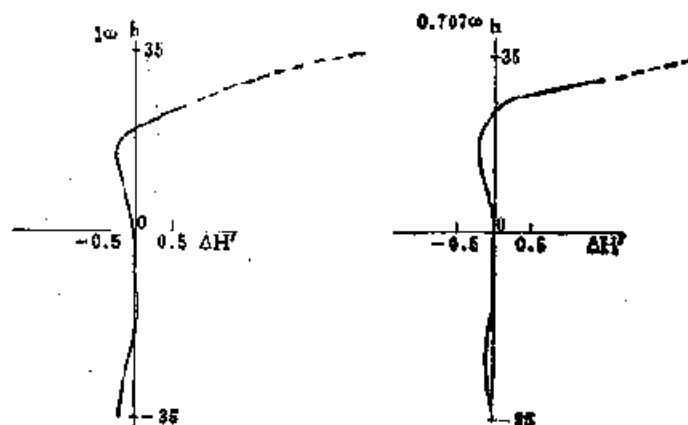
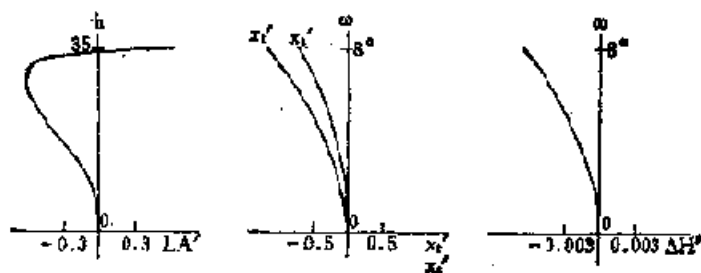
F. A. = 16°

Lp₁' = -5.0



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|-------|------|----------------|----------------|----|--------|------|----------------|----------------|
| | | 5.0* | | | | | | | |
| 1 | 288.7 | 20.0 | 1.697 | 56.0 | 5 | -138.9 | 9.9 | 1.72 | 29.0 |
| 2 | 288.7 | 1.4 | | | 6 | 42.2 | 9.1 | | |
| 3 | 54.3 | 17.0 | 1.697 | 56.0 | 7 | 115.4 | 31.6 | 1.697 | 56.0 |
| 4 | 132.8 | 8.4 | | | 8 | -55.7 | | | |

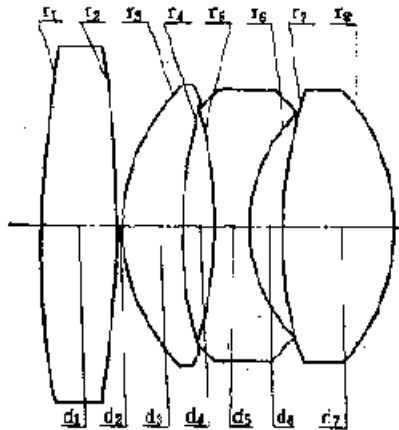
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.31 | -0.27 | -0.066 | -0.12 | -0.0086 | 14.05 | -0.045% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_2 - x'_1$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.52 | -0.0063 | -1.12 | -0.72 | -0.39 | 7.8 | 0.33 |
| 70 | -0.59 | -0.0033 | -0.61 | -0.38 | -0.23 | 5.3 | -0.033 |



编号: 01-00-032

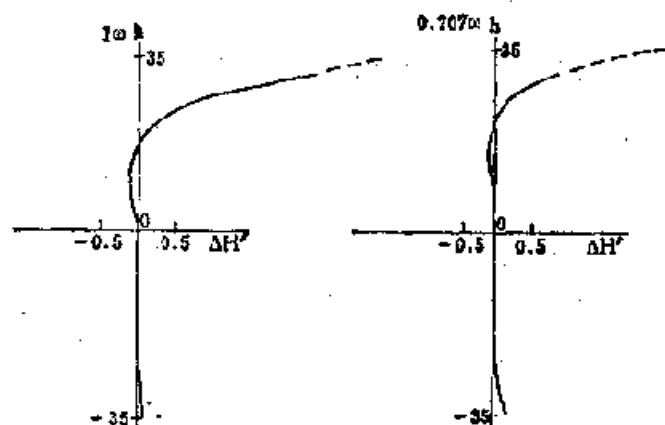
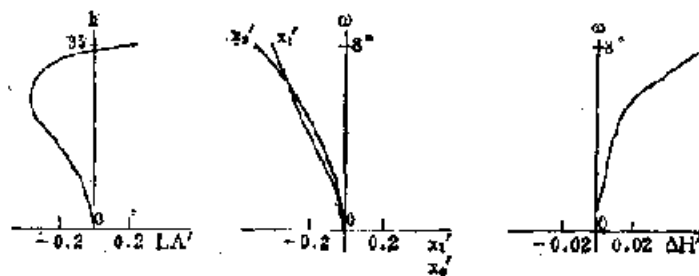
四 组 元 物 镜

E.F.L=100 B.F.L=48.09 FNo: -1.4 F.A. =18° $Lp'_1 = -5.0$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|--------|------|-------|-------|----|--------|------|-------|-------|
| | | 5.0* | | | | | | | |
| 1 | 258.4 | 20.1 | 1.697 | 56.0 | 5 | -398.7 | 12.2 | 1.720 | 29.0 |
| 2 | -258.4 | 1.5 | | | 6 | 37.3 | 8.84 | | |
| 3 | 48.6 | 17.1 | 1.697 | 56.0 | 7 | 93.75 | 31.7 | 1.697 | 56.0 |
| 4 | 87.81 | 8.87 | | | 8 | -52.7 | | | |

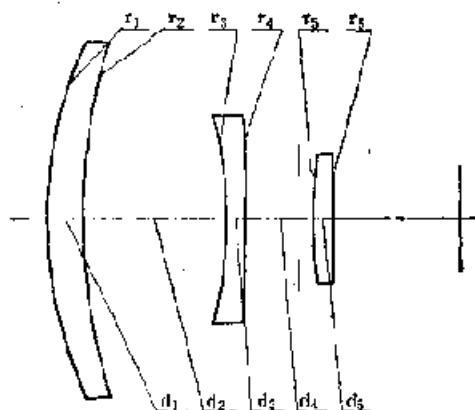
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_6 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.29 | -0.15 | -0.012 | -0.12 | 0.034 | 14.06 | 0.43% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_3 - x'_2$ | K_{T1} | $K_{T2.7}$ |
| 100 | 0.24 | 0.060 | -0.41 | -0.49 | 0.079 | 5.28 | 0.33 |
| 70 | -0.39 | 0.019 | -0.27 | -0.26 | -0.0099 | 1.86 | 0.069 |



编号: 01-00-033

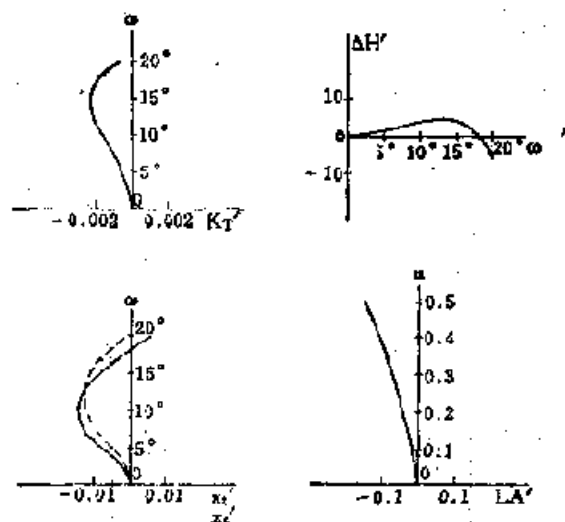
红 外 光 学 系 统

E. F. L = 2.0 英寸 B. F. L = FNo. = 2 F. A. = 40° 光栏直径 = 0.618



| 序 号 | r | d | z (8.50) | y (1.7~11.60) | ϕ |
|-----|---------|--------|------------|-----------------|--------|
| 1 | 2.498 | 0.267 | 3.4195 | 132.94 | 2.650 |
| 2 | 3.653 | 0.820 | | | |
| 3 | -2.732 | 0.140 | 2.3964 | 29.09 | 1.220 |
| 4 | -16.586 | 0.427* | | | |
| 5 | 5.412 | 0.160 | 3.4195 | 132.94 | 0.900 |
| 6 | -0.518 | | | | |

$$0.427^* = 0.352 + 0.075$$



编号: 01-00-034

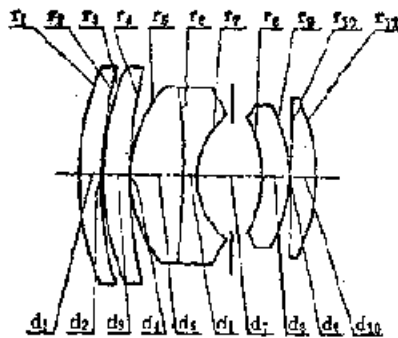
摄影物镜

E.F.L=1

B.F.L=0.52

FN₀ = 1

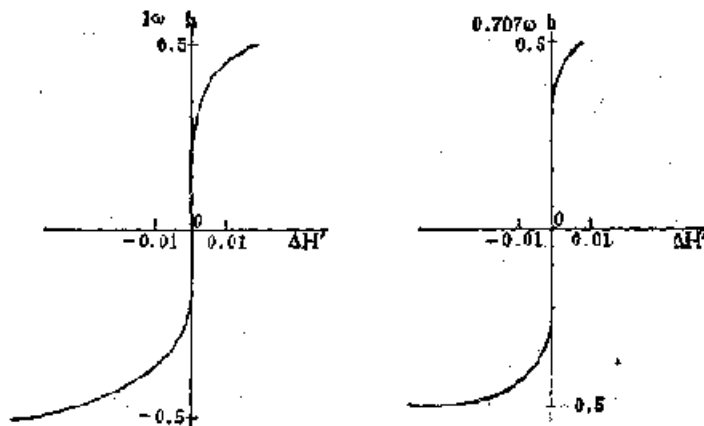
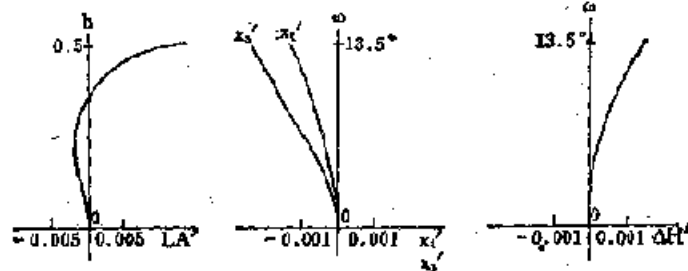
F: A. = 27'



| 序号 | r | d | r_a | v_a | 序号 | r | d | r_a | v_a |
|----|----------|---------|---------|-------|----|----------|----------|---------|-------|
| 1 | 0.69462 | 0.07244 | 1.60290 | 49.4 | 7 | 0.22854 | 0.18944* | | |
| 2 | 1.12979 | 0.002 | | | 8 | -0.30830 | 0.07589 | 1.73431 | 28.4 |
| 3 | 0.69462 | 0.07244 | 1.60290 | 49.4 | 9 | -0.46674 | 0.00978 | | |
| 4 | 1.12979 | 0.003 | | | 10 | 3.25487 | 0.07211 | 1.69290 | 49.4 |
| 5 | 0.30534 | 0.13989 | 1.60290 | 49.4 | 11 | -0.55524 | | | |
| 6 | -2.42522 | 0.03967 | 1.60416 | 30.9 | | | | | |

$$0.18944^* = 0.10000 + 0.08944$$

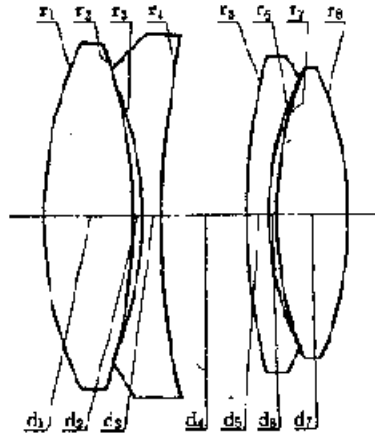
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.0022 | -0.00016 | 0.00014 | -0.0010 | 0.0012 | 0.24 | 0.63% |
| b 或 $\omega\%$ | LA' | $\Delta H'$ | x'_t | x_s | $x'_t - x'_s$ | K_{T1} | $K'_{T0.1}$ |
| 100 | 0.011 | -0.0015 | -0.0013 | -0.0024 | 0.0011 | -0.036 | -0.0026 |
| 70 | -0.00049 | 0.00061 | -0.0010 | -0.0017 | 0.00063 | -0.016 | -0.0018 |



编号: 01-00-035

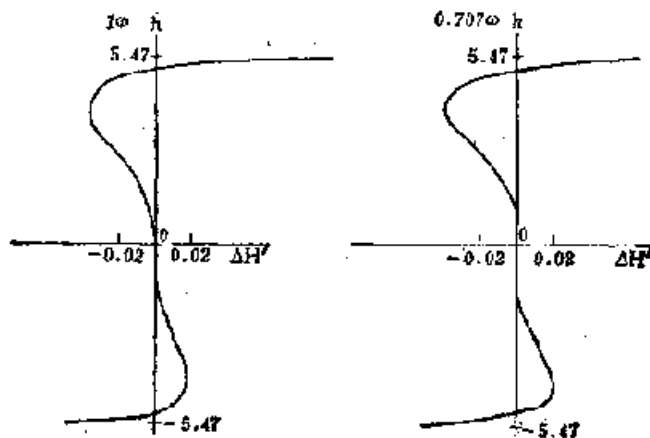
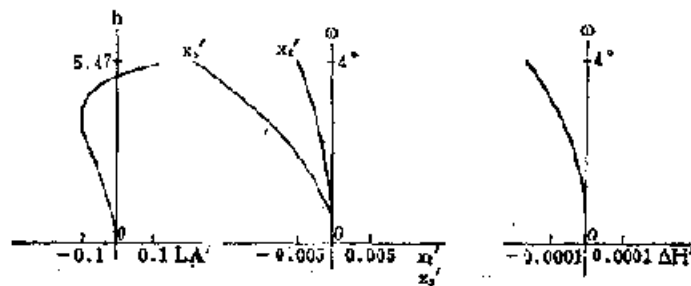
改型珀兹伐摄影物镜

E. F. L = 13.17 B. F. L = 5.20 FNo. = 1.2 F. A. = 8° $Lp_1' = -1.5$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|----------|-------|-------|-------|----|----------|------|-------|-------|
| | | 1.5* | | | | | | | |
| 1 | 10.3753 | 3.68 | 1.631 | 54.8 | 5 | 10.1859 | 0.93 | 1.867 | 31.0 |
| 2 | -26.0615 | 0.295 | | | 6 | 5.8513 | 1.00 | | |
| 3 | -17.7011 | 0.33 | 1.867 | 31.0 | 7 | 8.7902 | 4.61 | 1.631 | 54.8 |
| 4 | ∞ | 3.60 | | | 8 | -18.3654 | | | |

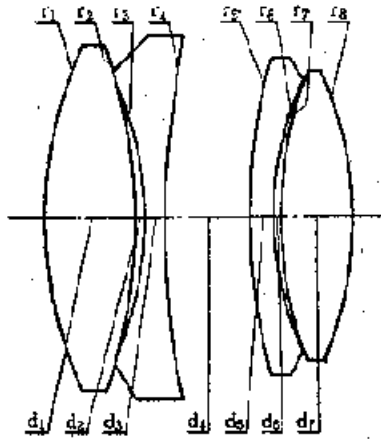
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.11 | -0.0070 | 0.0023 | -0.0093 | -0.00016 | 0.92 | -0.013% |
| h 或 ω % | LA' | $\Delta H'$ | x_1 | x_2 | $x_1' - x_2'$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.10 | -0.00016 | -0.0053 | -0.019 | 0.014 | 0.028 | -0.0097 |
| 70 | -0.10 | -0.000085 | -0.0030 | -0.010 | 0.0070 | 0.016 | -0.0077 |



编号: 01-00-036

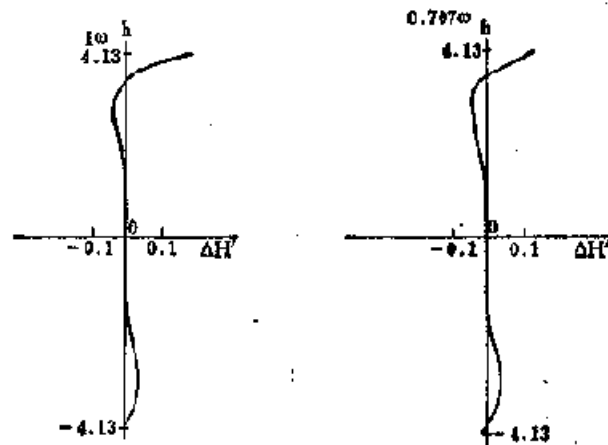
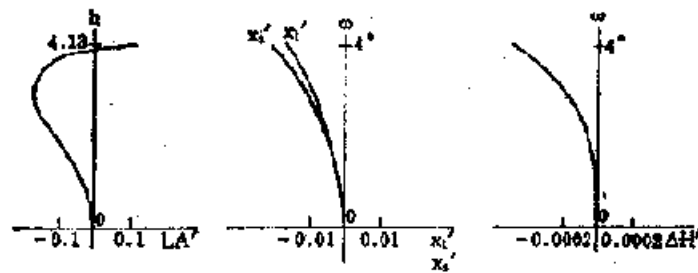
改型珀兹伐摄影物镜

E. F. L = 13.205 B. F. L = 9.82 $fNo. = 1.6$ F. A. = 8° $l_{p1}' = -1.5$



| 序号 | r | d | n_D | v_D | 序号 | $-r$ | d | n_D | v_D |
|----|----------|-------|-------|-------|----|---------|-------|-------|-------|
| 1 | 11.1686 | 2.5 | 1.657 | 50.9 | 5 | 44.4831 | 0.68 | 1.649 | 33.8 |
| 2 | -14.9968 | 0.291 | | | 6 | 8.1858 | 0.257 | | |
| 3 | -10.000 | 0.62 | 1.649 | 33.8 | 7 | 11.8032 | 2.0 | 1.657 | 50.9 |
| 4 | 63.6952 | 2.4 | | | 8 | -9.8174 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.099 | -0.0055 | 0.00025 | -0.0042 | -0.00030 | 0.92 | -0.050% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x_1' | x_2' | $x_1' - x_2'$ | K'_{FI} | $K'_{10.7}$ |
| 100 | 0.11 | -0.00046 | -0.016 | -0.020 | 0.0033 | 0.092 | -0.0018 |
| 70 | -0.17 | -0.00016 | -0.0086 | -0.010 | 0.0014 | 0.058 | -0.0022 |



编号: 01-00-037

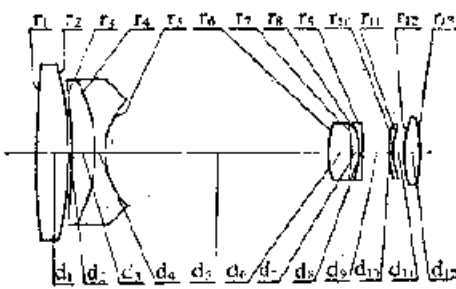
广角摄影物镜

E.F.L=11.0

B.F.L=22.2

FNo. =2.8

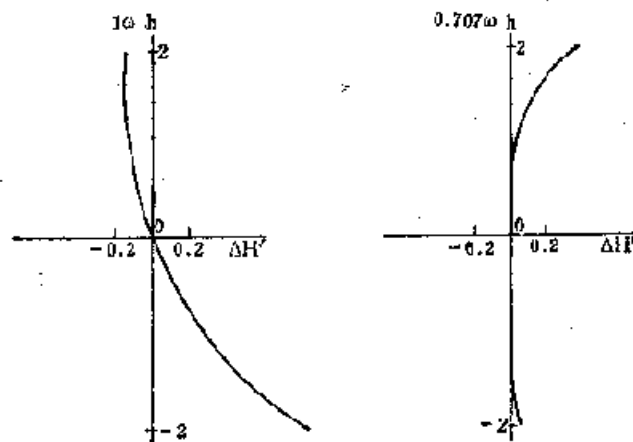
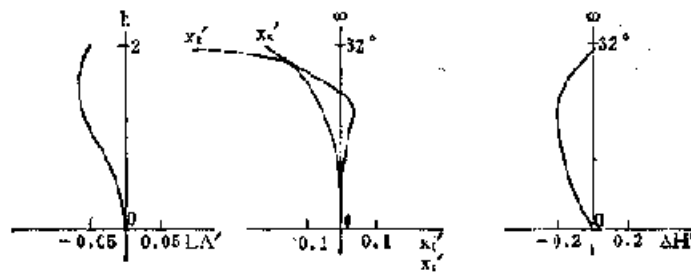
F.A. =64°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|----------|-------|--------|-------|----|--------|------|-------|-------|
| 1 | 166.789 | 5.0 | 1.541 | 47.3 | 8 | -11.32 | 0.76 | 1.621 | 36.2 |
| 2 | -60.881 | 0.5 | | | 9 | -46.23 | 4.25 | | |
| 3 | -100.016 | 3.5 | 1.617 | 36.6 | 10 | 17.25 | 0.76 | 1.649 | 33.8 |
| 4 | -22.711 | 1.5 | 1.5582 | 67.8 | 11 | 10.83 | 1.32 | | |
| 5 | 10.79 | 34.5* | | | 12 | 15.399 | 2.10 | 1.511 | 63.6 |
| 6 | 17.99 | 3.64 | 1.511 | 63.5 | | | | | |
| 7 | -12.139 | 0.52 | | | | | | | |

34.5* = 28.5 + 6.0

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | H1 | QP(10) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.013 | 0.0057 | 0.0053 | -0.014 | -0.19 | 6.87 | 0.34% |
| h 或 ω % | LA' | $\Delta H'$ | x'_i | x'_s | $x'_i - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.052 | 0.023 | -12.07 | -0.20 | -11.86 | 0.32 | 0.13 |
| 70 | -0.065 | -0.19 | 0.040 | -0.064 | 0.10 | 0.18 | 0.061 |



编号: 01-00-038

大相对孔径的折反射光学系统

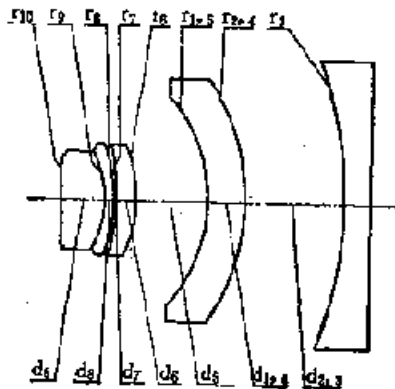
E. F. L = 1

B. F. L =

FNo. = 0.63

F. A. =

$$\beta = \left(\frac{1}{8.4} \right)^*$$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|----------|----------|----------|------|----|----------|----------|----------|------|
| 1 | -0.89025 | 0.2 | 1.51633 | 64.1 | 6 | -0.60387 | 0.12 | 1.51633 | 64.1 |
| 2 | -1.12294 | 0.55879 | | | 7 | -1.82836 | -0.004 | | |
| 3 | -2.36770 | 0.55879 | -1 | | 8 | -1.65009 | -0.04 | -1.71736 | 29.5 |
| 4 | -1.12294 | -0.2 | -1.51633 | 64.1 | 9 | -0.51633 | -0.25035 | -1.51633 | 64.1 |
| 5 | -0.89025 | -0.40326 | | | 10 | ∞ | | | |

编号: 01-00-039

大相对孔径的折反射光学系统

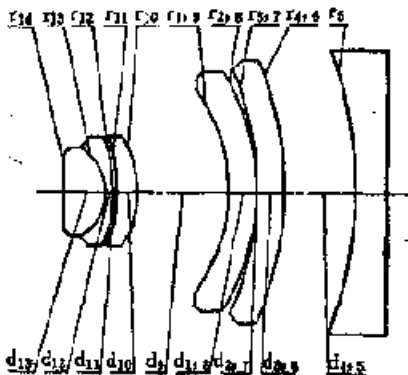
E. F. L = 1

B. F. L =

FNo. = 0.63

F. A. =

$$\beta = \left(\frac{1}{8.4} \right)^*$$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|----------|----------|----------|------|----|----------|----------|----------|------|
| 1 | -0.95546 | 0.13011 | 1.51633 | 64.1 | 8 | -1.37887 | -0.13011 | -1.51633 | 64.1 |
| 2 | -1.57887 | 0.0043 | | | 9 | -0.95546 | -0.31095 | | |
| 3 | -1.91034 | 0.16129 | 1.62004 | 36.3 | 10 | -0.50339 | -0.12048 | -1.51633 | 64.1 |
| 4 | -1.68398 | 0.3823 | | | 11 | -1.33064 | -0.0043 | | |
| 5 | -2.38359 | -0.3823 | -1 | | 12 | -0.94432 | -0.03978 | -1.71736 | 29.5 |
| 6 | -1.68398 | -0.16129 | -1.62004 | 36.3 | 13 | -0.32242 | -0.23726 | -1.51633 | 64.1 |
| 7 | -1.91034 | -0.0043 | | | 14 | -6.25930 | | | |

编号: 01-00-040

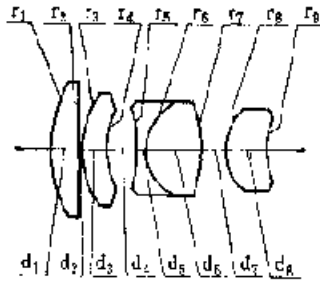
大孔径放映镜头

E. F. L = 100

B. F. L = 15.8

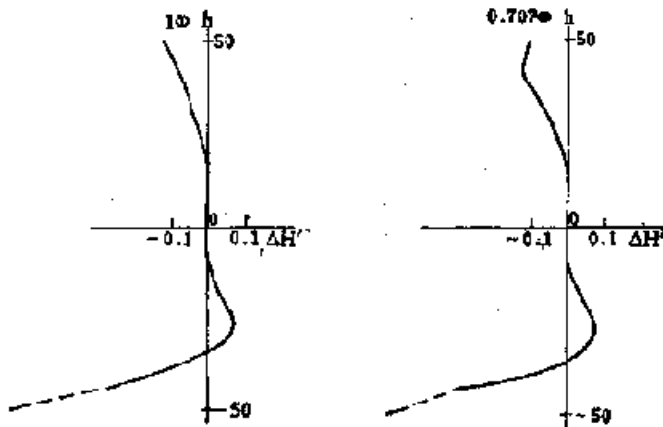
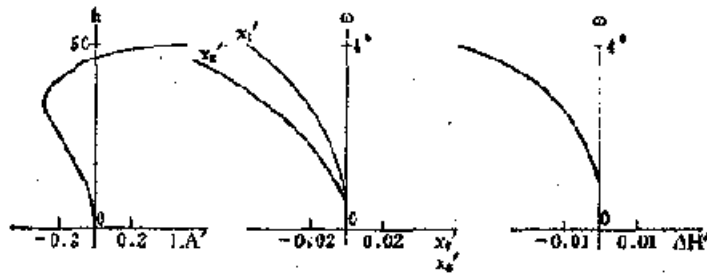
FNo. = 1.0

F. A. = 8°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|--------|------|----------------|----------------|----|-------|------|----------------|----------------|
| 1 | 109.2 | 28.2 | 1.617 | 54.9 | 6 | 40.1 | 45.8 | 1.670 | 47.2 |
| 2 | 3200.7 | 2.6 | | | 7 | -88.3 | 18.8 | | |
| 3 | 67.3 | 21.1 | 1.605 | 43.6 | 8 | 44.6 | 31.8 | 1.734 | 51.0 |
| 4 | 65.5 | 24.6 | | | 9 | 59.0 | | | |
| 5 | -107.9 | 6.6 | 1.751 | 27.8 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100°) |
|---------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| | -0.49 | 0.082 | 0.015 | 0.066 | -0.038 | 7 | -0.55% |
| h 或 ω % | LA' | ΔH' | x'_1 | x'_2 | x'_1 - x'_2 | K _{r1} | K _{r0.7} |
| 100 | 0.50 | -0.038 | -0.055 | -0.087 | 0.042 | -4.75 | -0.046 |
| 70 | -0.27 | -0.013 | -0.023 | -0.050 | 0.028 | -1.46 | -0.017 |



编号: 01-00-041

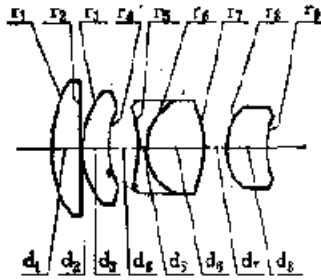
大孔径放映镜头

E.F.L=100

B.F.L=17.9

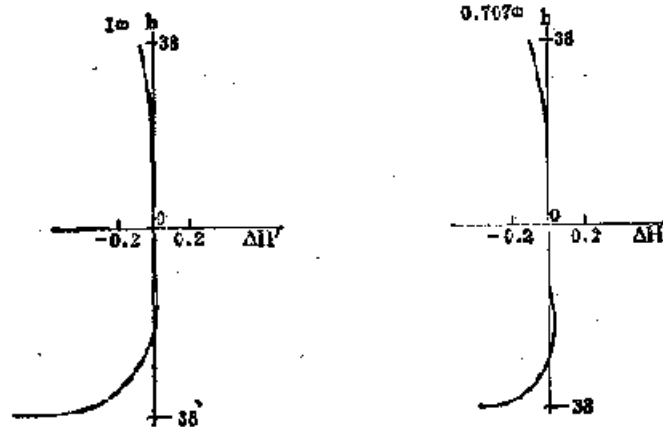
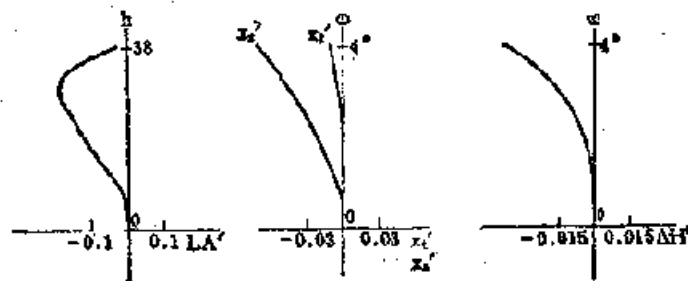
FNo.=1.3

F.A.=8°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|--------|------|----------------|----------------|----|-------|------|----------------|----------------|
| 1 | 98.9 | 21.4 | 1.611 | 58.8 | 6 | 32.6 | 35.2 | 1.611 | 58.8 |
| 2 | 1006.0 | 9.3 | | | 7 | -86.1 | 5.2 | | |
| 3 | 61.0 | 26.3 | 1.611 | 58.8 | 8 | 40.0 | 28.5 | 1.549 | 33.3 |
| 4 | 56.2 | 9.0 | | | 9 | 49.5 | | | |
| 5 | -143.2 | 28.0 | 1.720 | 29.3 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|--------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| | -0.18 | 0.026 | 0.0138 | -0.035 | 0.030 | 7 | -0.55% |
| h 或 ω% | LA' | ΔH' | x'_t | x'_s | x'_t - x'_s | K _{T1} | K _{T0.7} |
| 100 | -0.042 | -0.038 | -0.0098 | -0.073 | 0.063 | -0.46 | -0.025 |
| 70 | -0.17 | -0.013 | 0.0015 | -0.037 | 0.039 | -0.24 | -0.0093 |



1108699

编号: 01-00-042

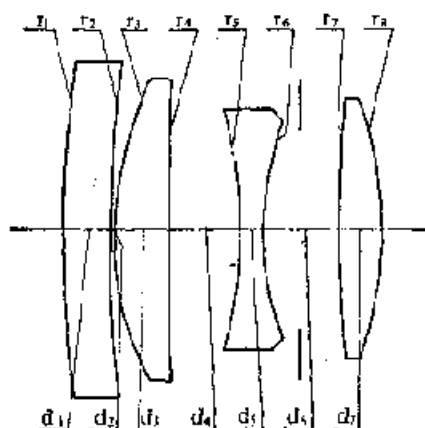
消象散的四镜片物镜

E. F. L=100

B. F. L=81

FNo. =2.7

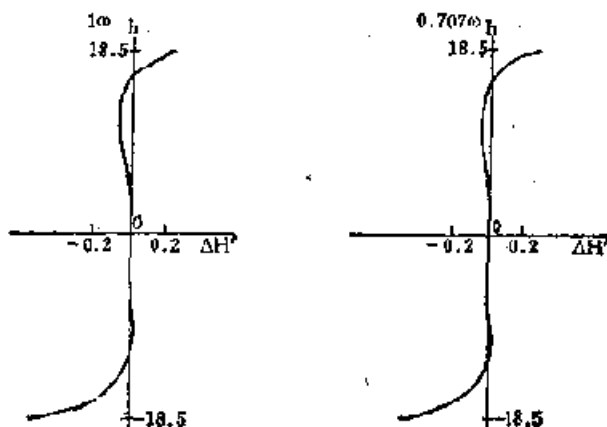
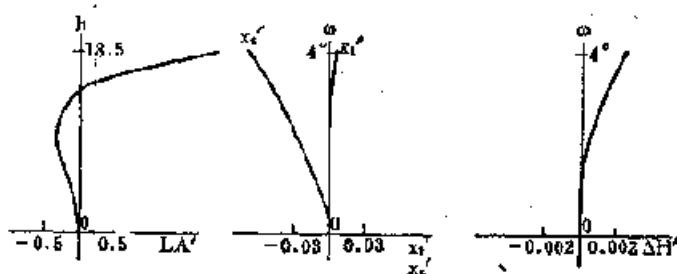
F. A. =8°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|------|-------|------|----|--------|--------|-------|------|
| 1 | 116.31 | 5.59 | 1.610 | 56.9 | 5 | -54.00 | 1.28 | 1.649 | 33.8 |
| 2 | 144.26 | 0.23 | | | 6 | 42.08 | 11.02* | | |
| 3 | 41.58 | 6.10 | 1.658 | 56.8 | 7 | 713.47 | 6.47 | 1.620 | 60.3 |
| 4 | -563.55 | 8.27 | | | 8 | -39.92 | | | |

$$11.02^* = 5.00 + 6.02$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.11 | -0.0058 | 0.0026 | -0.0073 | 0.00094 | 7 | 0.037% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | 1.96 | 0.0025 | 0.0095 | 0.067 | 0.077 | 0.17 | -3.040 |
| 70 | -0.25 | 0.00091 | 0.0043 | -0.034 | 0.038 | -0.12 | -3.027 |



编号: 01-00-043

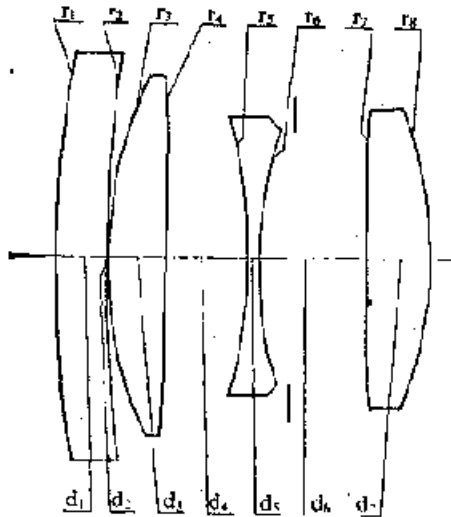
消象散的四镜片物镜

E. F. L = 100

B. F. L = 76

FN₀ = 2.4

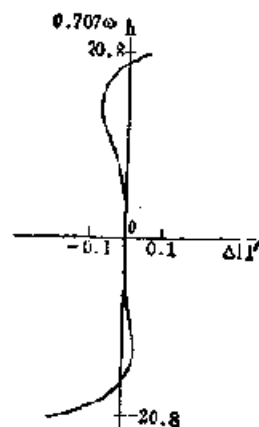
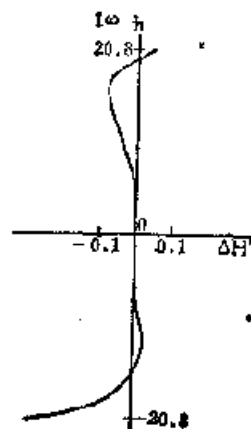
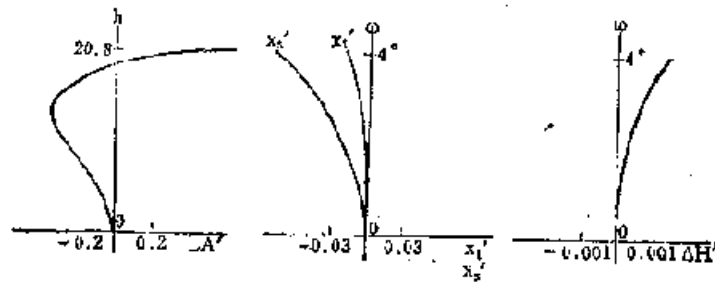
F. A. = 8°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|--------|--------|------|----|---------|---------|--------|------|
| 1 | 146.91 | 7.4535 | 1.5890 | 61.6 | 5 | -67.082 | 3.7288 | 1.7050 | 30.1 |
| 2 | 198.05 | 0.5324 | | | 6 | 47.916 | 11.180* | | |
| 3 | 47.916 | 8.5188 | 1.6930 | 53.3 | 7 | 198.05 | 6.9211 | 1.7500 | 44.5 |
| 4 | 1064.8 | 10.648 | | | 8 | -51.429 | | | |

$$11.180^* = 5.000 + 6.180$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | III | QF(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.13 | -0.0055 | 0.0025 | -0.0091 | 0.00038 | 7 | 0.020% |
| h 或 ω % | LA' | AH' | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.66 | 0.0014 | -0.014 | -0.074 | 0.060 | -0.13 | -0.031 |
| 70 | -0.37 | 0.00149 | 0.0075 | -0.037 | 0.030 | -0.090 | -0.021 |



编号: 01-00-044

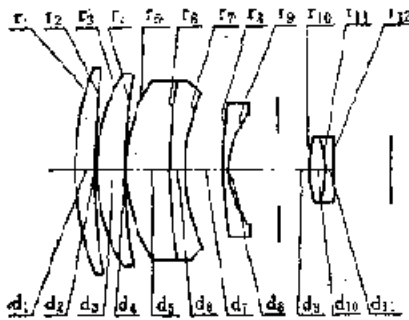
摄影或电影摄影用的大孔径望远物镜

E. F. L = 100

B. F. L = 29.1

FNo. = 2

F. A. = 20'

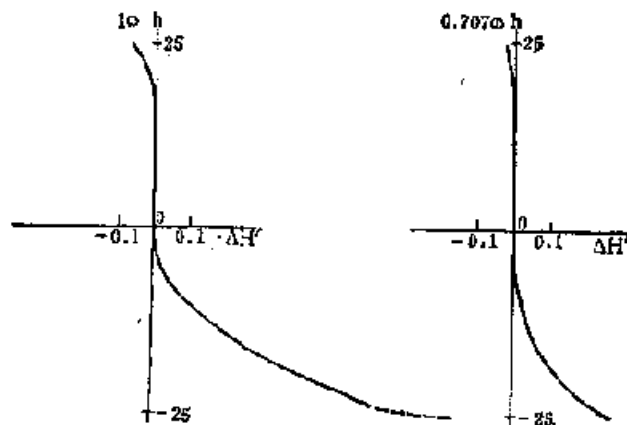
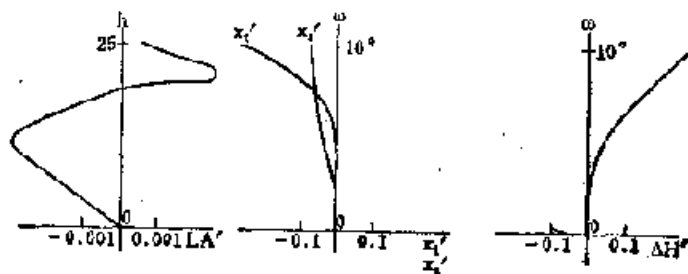


| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|---------|-------|----|---------|--------|---------|-------|
| 1 | 80.59 | 6.08 | 1.51871 | 63.96 | 7 | 50.75 | 10.40 | | |
| 2 | 581.56 | 0.06 | | | 8 | 99.39 | 1.55 | 1.70444 | 29.84 |
| 3 | 52.28 | 8.11 | 1.51871 | 63.96 | 9 | 20.06 | 22.22* | | |
| 4 | 174.19 | 0.11 | | | 10 | 62.49 | 4.55 | 1.67245 | 44.71 |
| 5 | 43.11 | 12.28 | 1.62287 | 60.06 | 11 | -17.55 | 2.07 | 1.62554 | 57.87 |
| 6 | 441.68 | 4.15 | 1.70444 | 29.84 | 12 | -259.70 | | | |

$\Sigma d = 71.59$

$22.22^* = 14.00 + 8.22$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.0035 | 0.00044 | 0.010 | -0.032 | 0.19 | 17.63 | 1.37% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.00052 | 0.29 | -0.26 | -0.077 | -0.18 | 0.43 | 0.15 |
| 70 | -0.00091 | 0.12 | -0.040 | -0.064 | 0.024 | 0.12 | 0.345 |



编号: 01-00-045

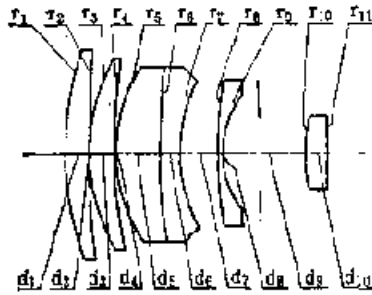
摄影或电影摄影用的大孔径望远物镜

E. F. L = 100

B. F. L = 29.6

FNo. = 2

F. A. = 20'

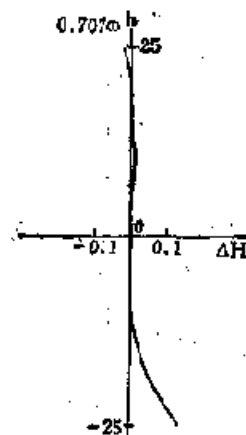
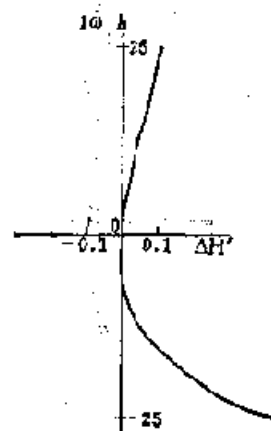
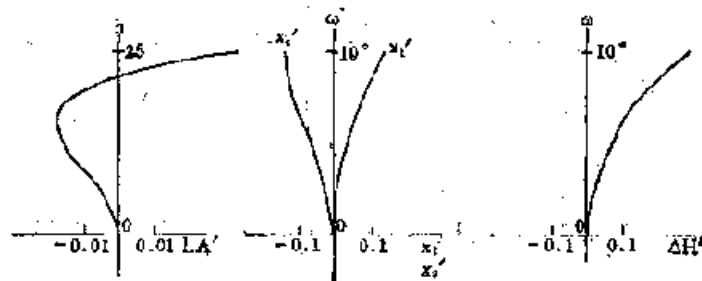


| 序号 | r | r | n _s | v _s | 序号 | r | d | n _s | v _s |
|----|--------|-------|----------------|----------------|----|----------|--------|----------------|----------------|
| 1 | 84.32 | 6.34 | 1.51871 | 63.96 | 7 | 49.03 | 10.48 | | |
| 2 | 535.46 | 0.06 | | | 8 | 104.87 | 1.56 | 1.70444 | 29.84 |
| 3 | 52.64 | 7.94 | 1.51871 | 63.96 | 9 | 24.47 | 22.37* | | |
| 4 | 175.38 | 0.11 | | | 10 | 55.47 | 6.69 | 1.7044 | 29.84 |
| 5 | 43.36 | 12.36 | 1.62287 | 60.06 | 11 | -3130.83 | | | |
| 6 | 377.84 | 4.18 | 1.70444 | 29.84 | | | | | |

$\Sigma d = 72.09$

$22.37^* = 10.00 + 12.37$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.011 | -0.011 | 0.022 | -0.056 | 0.19 | 17.63 | 1.85% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T3.7}$ |
| 100 | 0.033 | 0.29 | 0.135 | -0.135 | 0.27 | 0.26 | 0.11 |
| 70 | -0.017 | 0.12 | 0.062 | -0.10 | 0.17 | 0.056 | 0.023 |



编号: 01-00-046

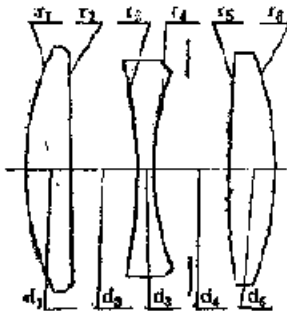
三片式物镜

E. F. L = 100

B. F. L = 82.79

FNo. = 2.8

F. A. = 47°

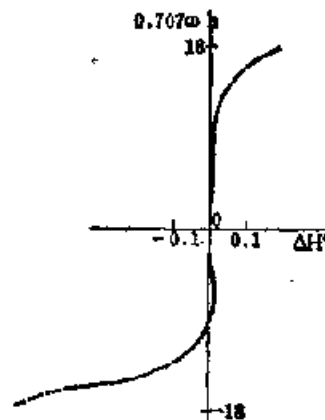
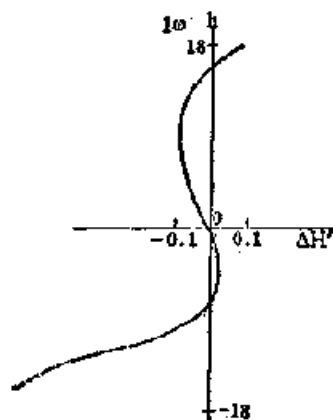
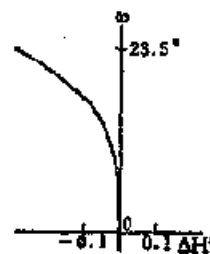
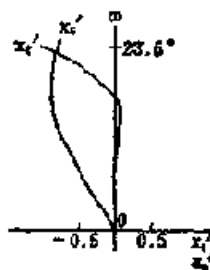
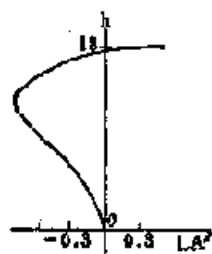


| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|----------|---------|---------|-------|----|----------|-----------|---------|-------|
| 1 | 38.4537 | 6.47945 | 1.67000 | 48.13 | 4 | 38.9151 | 10.43249* | | |
| 2 | 942.116 | 9.15967 | | | 5 | 149.969 | 6.40254 | 1.64850 | 47.50 |
| 3 | -57.6785 | 2.37644 | 1.70445 | 29.84 | 6 | -45.7984 | | | |

$$\Sigma d = 34.85059$$

$$10.43249^* = 5.00000 + 5.43249$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.16 | 0.047 | 0.066 | -0.23 | -0.052 | 43.48 | -0.66% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_3 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.47 | -0.29 | -1.94 | -0.84 | -0.20 | -1.38 | -0.21 |
| 70 | -0.75 | -0.084 | 0.011 | -0.90 | 0.91 | -0.58 | -0.334 |



编号: 01-00-047

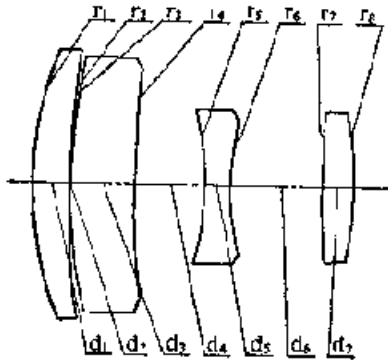
四 片 式 物 镜

E. F. L = 100

B. F. L = 72.53

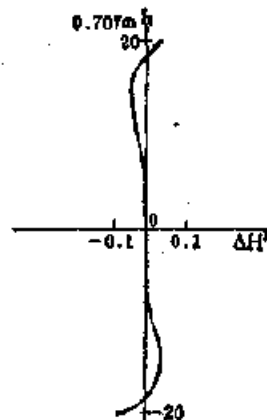
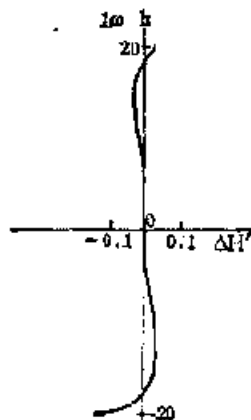
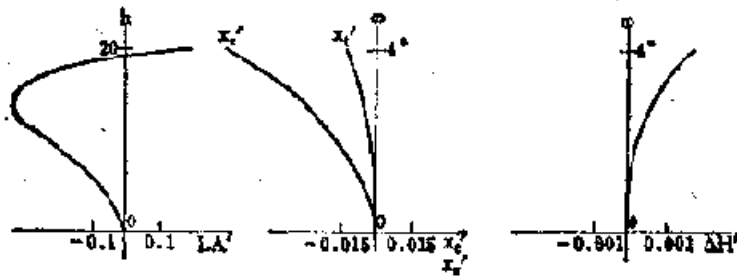
FNo. = 2.5

F. A. = 8°



| 序号 | r | c | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|---------|-------|----|--------|-------|---------|-------|
| 1 | 53.10 | 5.94 | 1.71300 | 53.89 | 5 | -57.78 | 4.24 | 1.69895 | 30.05 |
| 2 | 308.51 | 0.11 | | | 6 | 41.09 | 14.24 | | |
| 3 | 98.74 | 9.79 | 1.56873 | 63.12 | 7 | 159.17 | 5.03 | 1.71300 | 53.89 |
| 4 | 268.73 | 10.48 | | | 8 | -49.09 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.090 | 0.0046 | 0.0020 | -0.0072 | 0.00073 | 7 | 0.025% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.18 | 0.0018 | -0.012 | -0.063 | 0.050 | -0.047 | 0.0029 |
| 70 | -0.31 | 0.00063 | -0.0069 | -0.032 | 0.025 | -0.029 | 0.0035 |



编号: 01-00-048

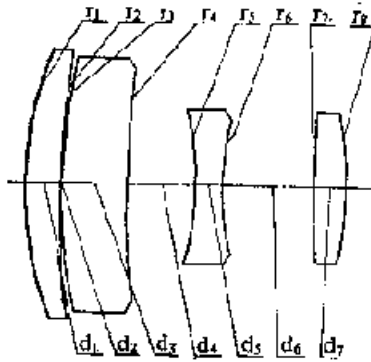
四片式物镜

E. F. L = 100

B. F. L = 72.70

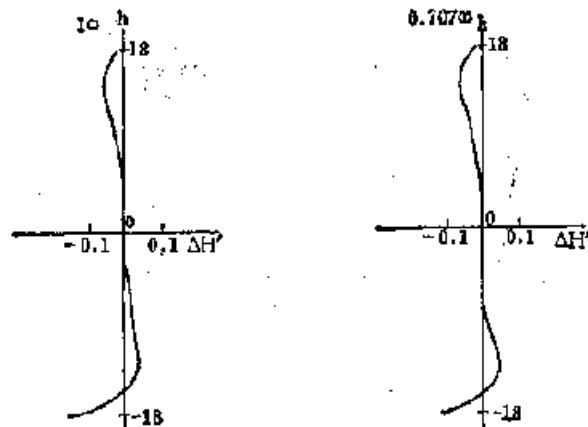
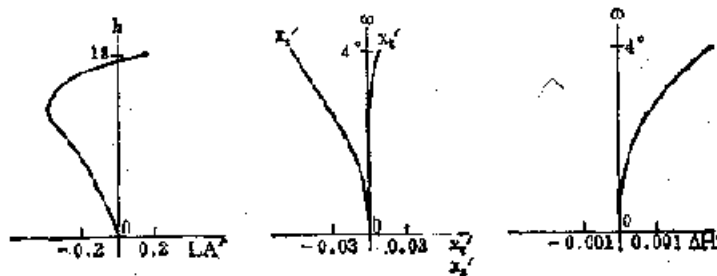
FNo. = 2.8

F. A. = 8°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|---------|-------|----|--------|-------|---------|-------|
| 1 | 42.03 | 4.40 | 1.02299 | 60.29 | 5 | -59.68 | 2.61 | 1.72151 | 29.23 |
| 2 | 199.95 | 0.11 | | | 6 | 38.98 | 10.55 | | |
| 3 | 88.27 | 9.81 | 1.52300 | 59.6 | 7 | 118.60 | 5.64 | 1.66892 | 44.98 |
| 4 | 273.54 | 10.25 | | | 8 | -44.41 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1m) |
|------------------|--------------|--------------|--------------|--------------|---------------|----------|-------------|
| | -0.091 | 0.0030 | 0.0024 | -0.0066 | 0.00095 | 7 | 0.037% |
| h 或 ω % | LA' | $\Delta H'$ | x'_i | x'_a | $x'_i - x'_a$ | K_{T1} | $K'_{T0.7}$ |
| 100 | 0.15 | 0.0026 | 0.0095 | 0.064 | 0.074 | -0.083 | 0.0055 |
| 70 | -0.41 | 0.00093 | 0.0345 | -0.032 | 0.037 | -0.055 | -0.0028 |



编号: 01-00-049

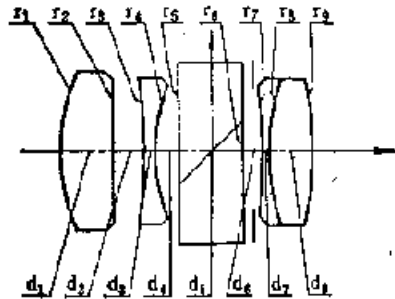
单镜头反射式照相机镜头

E.F.L=1.0

B.F.L=0.73

FNo.=2.8

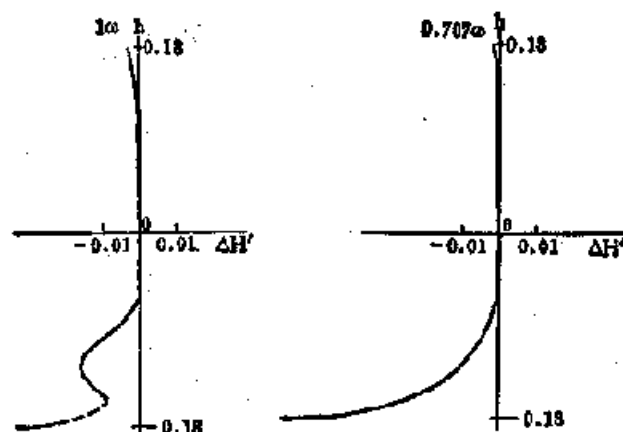
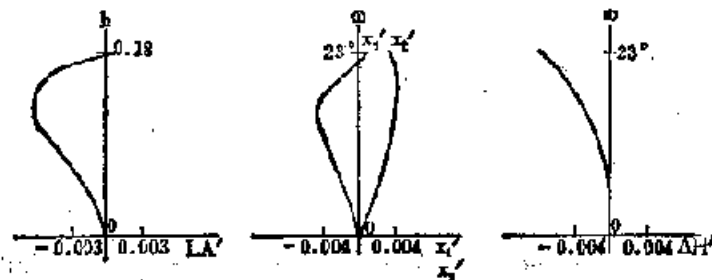
F.A.= $\pm 23^\circ$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|----------|-------|-------|-------|----|----------|--------|-------|-------|
| 1 | 0.376 | 0.1 | 1.717 | 47.9 | 6 | ∞ | 0.030* | | |
| 2 | 29.5 | 0.58 | | | 7 | -4.0 | 0.016 | 1.603 | 38.6 |
| 3 | -0.91 | 0.02 | 1.573 | 32.2 | 8 | 0.486 | 0.08 | 1.717 | 47.9 |
| 4 | 0.333 | 0.045 | | | 9 | -0.610 | | | |
| 5 | ∞ | 0.12 | 1.515 | 64.0 | | | | | |

$$0.030^* = 0.015 + 0.015$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QT(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.0013 | 0.00053 | 0.00045 | -0.0015 | -0.0023 | 0.41 | -1.88% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K'_{T0.7}$ |
| 100 | 0.0013 | -0.0079 | 0.0037 | 0.00077 | 0.0029 | -0.20 | -0.0094 |
| 70 | -0.0062 | -0.0028 | 0.0039 | -0.0043 | 0.0082 | -0.030 | -0.0049 |



编号: 01-00-050

单镜头反射式照相机镜头

模

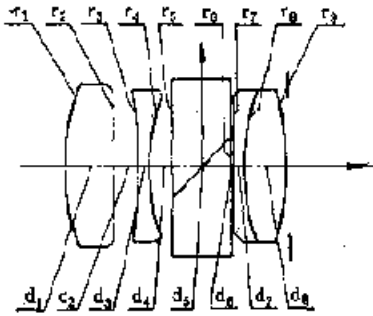
E. F. L = 1.0

B. F. L = 0.84

FNo. = 2.8

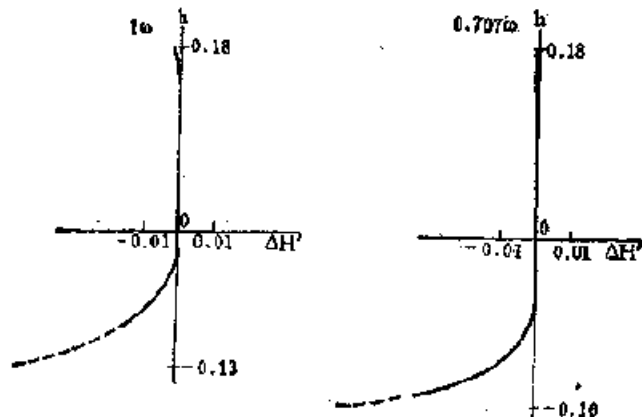
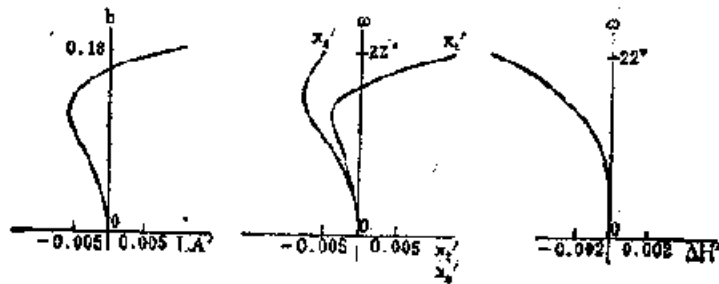
F. A. = $\pm 22^\circ$

光栏位于最后表面的顶点处。



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|----------|-------|-------|------|----|----------|-------|-------|------|
| 1 | 0.365 | 0.09 | 1.713 | 43.2 | 6 | ∞ | 0.004 | | |
| 2 | 12.2 | 0.046 | | | 7 | ∞ | 0.018 | 1.503 | 38.0 |
| 3 | -0.92 | 0.02 | 1.673 | 32.2 | 8 | 0.40 | 0.75 | 1.717 | 47.9 |
| 4 | 0.323 | 0.045 | | | 9 | -0.546 | | | |
| 5 | ∞ | 0.11 | 1.516 | 64.0 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|------------------------|--------------|--------------|--------------|--------------|---------------|----------|-------------|
| | -0.0015 | 0.00097 | -0.00010 | -0.0013 | -0.0014 | 0.40 | 1.62% |
| λ 或 ω % | LA' | $\Delta H'$ | x'_t | x'_i | $x'_i - x'_t$ | K_{F1} | $K'_{F0.7}$ |
| 100 | 0.011 | -0.0085 | 0.013 | -0.0056 | 0.010 | -0.35 | -0.028 |
| 70 | -0.0058 | -0.0019 | -0.0042 | -0.0076 | 0.0034 | -0.061 | -0.0056 |



编号: 01-00-051

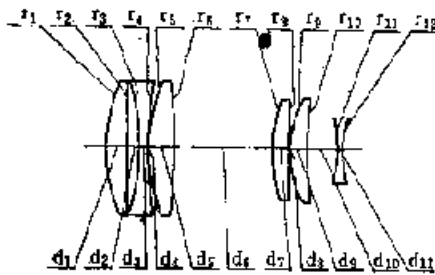
带有平象场镜及至少三个正透镜的珀兹伐物镜

E. F. L = 100

B. F. L = 17.04

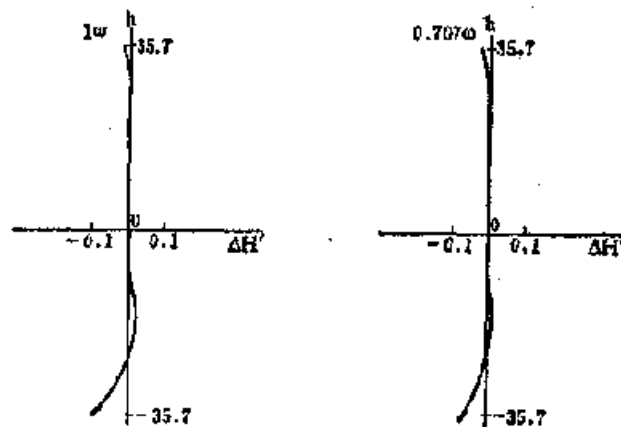
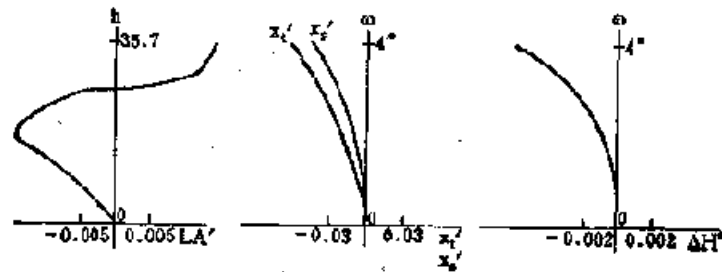
FNo. = 1.4

F. A = 8°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|----------|-------|-------|-------|----|----------|-------|-------|-------|
| 1 | 89.6 | 12.7 | 1.611 | 58.8 | 7 | 88.3 | 9.0 | 1.611 | 58.8 |
| 2 | ∞ | 5.43 | | | 8 | ∞ | 0.587 | | |
| 3 | -120.2 | 4.89 | 1.720 | 29.3 | 9 | 66.0 | 9.4 | 1.611 | 58.8 |
| 4 | 257.3 | 0.537 | | | 10 | 170.2 | 16.9 | | |
| 5 | 106.3 | 12.9 | 1.611 | 58.8 | 11 | -71.8 | 2.54 | 1.720 | 29.3 |
| 6 | -333 | 55.4 | | | 12 | 79.7 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1w) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-------------|
| | -0.028 | 0.016 | -0.0033 | -0.0091 | -0.0041 | 7 | 0.084% |
| h 或 ω % | LA' | $\Delta L'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K'_{T0.1}$ |
| 100 | 0.014 | -0.0058 | -0.071 | -0.046 | -0.025 | -0.059 | -0.0012 |
| 70 | -0.0054 | -0.0020 | -0.036 | -0.023 | -0.012 | -0.043 | -0.0012 |



编号: 01-00-052

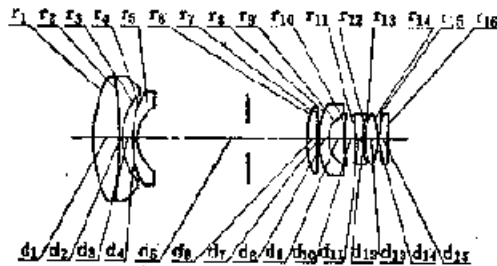
广角长工作截距摄影物镜

E. F. L = 10.0

B. F. L = 18.59

FN_D = 2.3

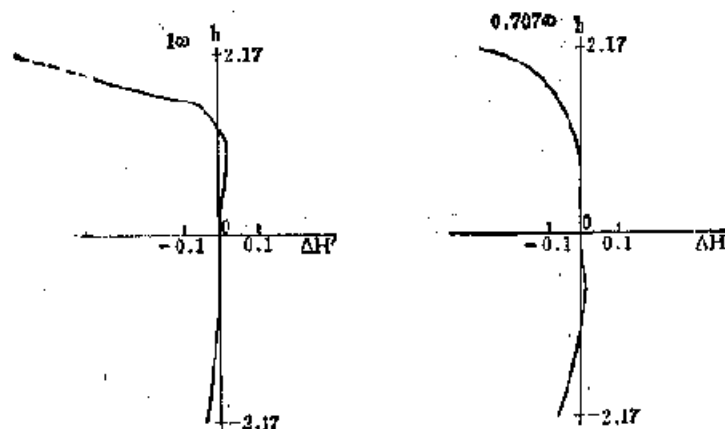
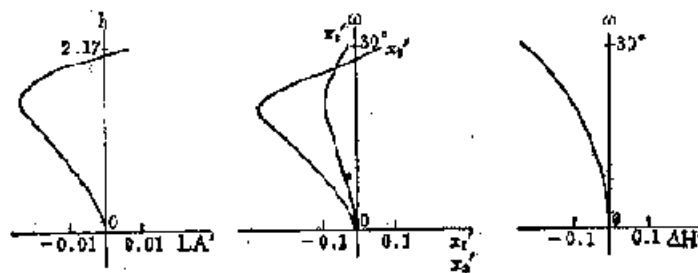
F. A. = 60°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|---------|--------|----------------|----------------|----|---------|------|----------------|----------------|
| 1 | 39.42 | 7.06 | 1.8037 | 41.8 | 9 | 7.91 | 4.28 | 1.598 | 54.8 |
| 2 | -158.91 | 1.56 | 1.498 | 67.0 | 10 | 31.70 | 3.30 | | |
| 3 | 14.52 | 3.21 | | | 11 | -30.11 | 1.90 | 1.5506 | 27.8 |
| 4 | 29.40 | 1.36 | 1.720 | 29.3 | 12 | 16.48 | 0.65 | | |
| 5 | 12.14 | 46.06* | | | 13 | 26.58 | 2.77 | 1.657 | 57.2 |
| 6 | 34.24 | 2.97 | 1.729 | 50.0 | 14 | -28.28 | 0.97 | | |
| 7 | 326.04 | 0.07 | | | 15 | 31.93 | 2.22 | 1.657 | 57.2 |
| 8 | 19.23 | 2.30 | 1.651 | 55.8 | 16 | -532.76 | | | |

46.06* = 31.09 + 14.97

| | ΣS ₁ | ΣS ₂ | ΣS ₃ | ΣS ₄ | ΣS ₅ | Hl | QP(100) |
|---------|-----------------|-----------------|-----------------|-----------------|-------------------------------------|-----------------|-------------------|
| | 0.0072 | -0.033 | 0.025 | 0.0035 | -0.13 | 6.24 | -3.96% |
| h 或 ω % | LA' | ΔH' | x ₁ | x ₂ | x ₁ ' - x ₂ ' | K _{T1} | K _{T0.7} |
| 100 | 0.0069 | -0.24 | 0.068 | -0.911 | 0.679 | -1.73 | -0.017 |
| 70 | -0.022 | -0.12 | -0.28 | -0.089 | -0.19 | -0.18 | -0.039 |



编号: 01-00-053

具有负前组与多镜片正后组的放映物镜

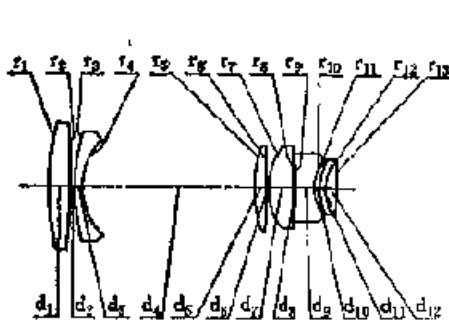
E. F. L = 100

B. F. L = 87.22

FNo. = 1.4

F. A. = 30°

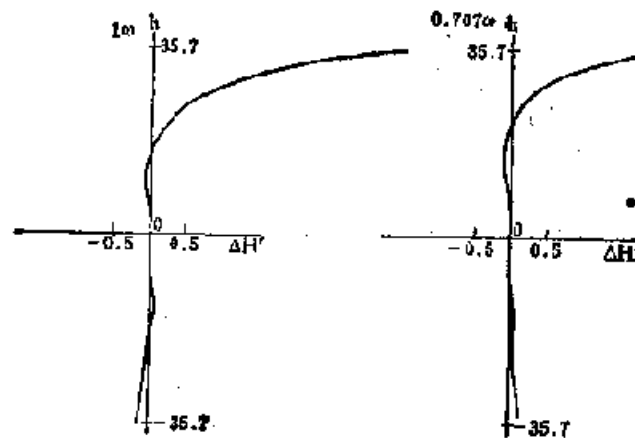
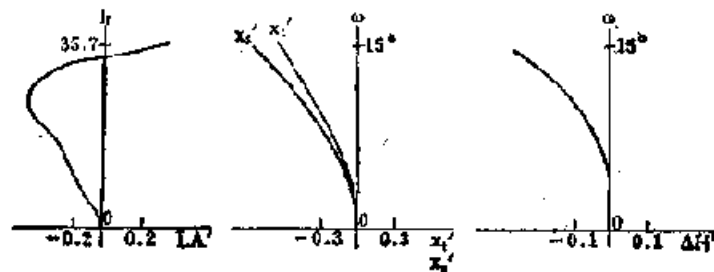
$Lp'_4 = 290$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|----------|-------|---------|-------|----|----------|------|---------|-------|
| 1 | 555.40 | 30.0 | 1.65285 | 33.5 | 8 | 980.20 | 5.0 | | |
| 2 | ∞ | 10.0 | | | 9 | -1597.50 | 35.0 | 1.76846 | 26.8 |
| 3 | 281.90 | 15.0 | 1.61521 | 58.4 | 10 | 64.50 | 7.0 | | |
| 4 | 103.40 | 290.0 | | | 11 | 93.15 | 10.0 | 1.52031 | 58.8 |
| 5 | 242.00 | 20.0 | 1.62287 | 60.1 | 12 | 71.02 | 20.0 | 1.73692 | 50.8 |
| 6 | -565.60 | 0.5 | | | 13 | -347.20 | | | |
| 7 | 110.20 | 40.0 | 1.62287 | 60.1 | | | | | |

$\Sigma d = 482.5$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | H' | QF(100) |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.33 | -0.082 | 0.029 | -0.25 | -0.17 | 26.92 | -0.98% |
| h 或 ω % | LA' | $\Delta II'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.35 | -0.26 | -0.65 | -0.87 | 0.22 | 1.72 | 0.15 |
| 70 | -0.41 | -0.093 | -0.36 | -0.46 | 0.096 | 0.95 | 0.060 |



编号: 01-00-054

具有负前组与多镜片正后组的放映物镜

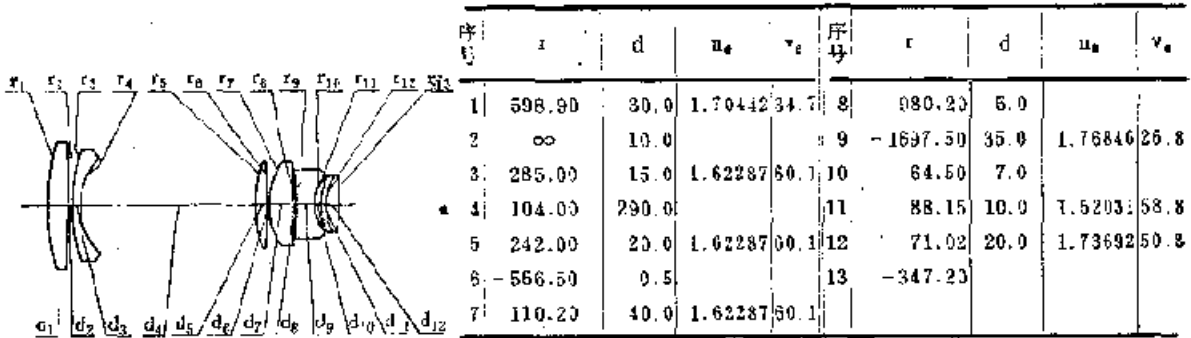
E. F. L = 100

B. F. L = 87.20

FNo. = 1.4

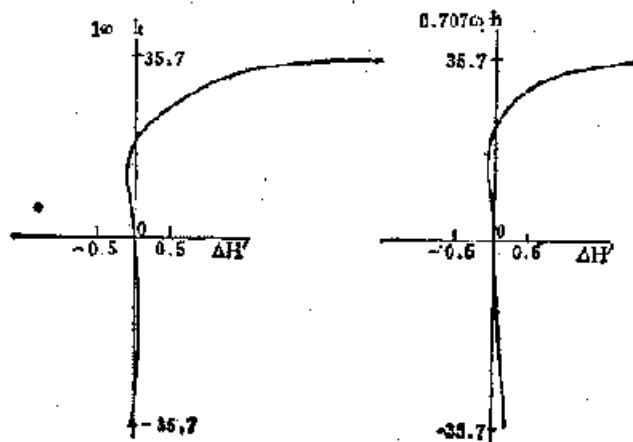
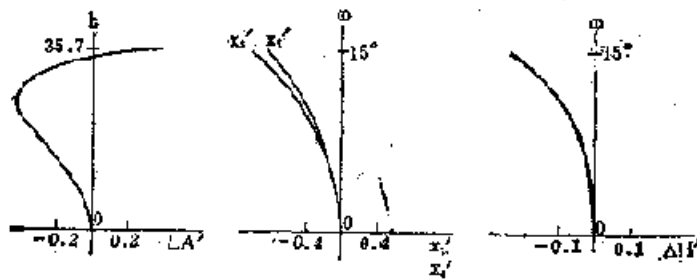
F. A. = 30°

$Lp'_4 = 290$



$\Sigma d = 482.5$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | H | $Q^2(1m)$ |
|------------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.36 | -0.082 | 0.015 | -0.25 | -0.16 | 26.75 | -0.91% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_3 - x'_4$ | K_{F1} | $K_{F0.7}$ |
| 100 | 0.38 | -0.34 | -0.81 | -0.91 | 0.099 | 1.88 | 0.19 |
| 70 | -0.43 | -0.088 | -0.43 | -0.47 | 0.039 | 1.05 | 0.085 |



编号: 01-00-055

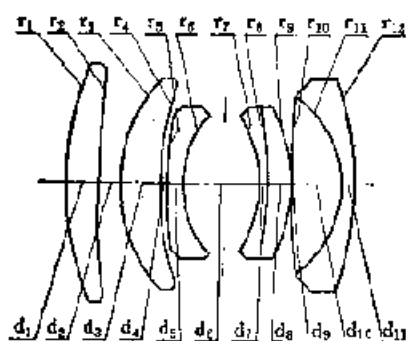
四组元摄影物镜

E. F. L = 1.0

B. F. L = 0.55

FNo. = 1.4

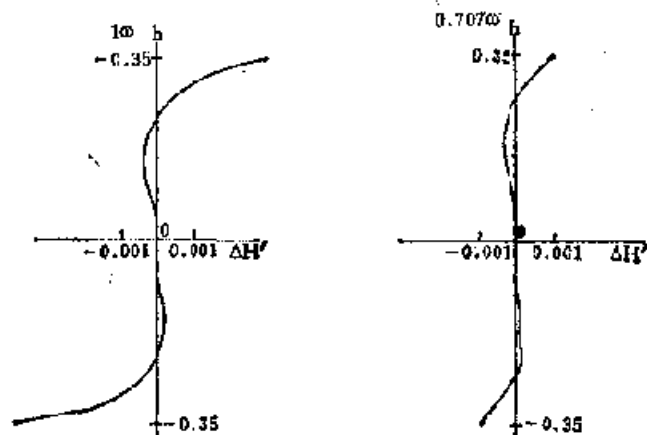
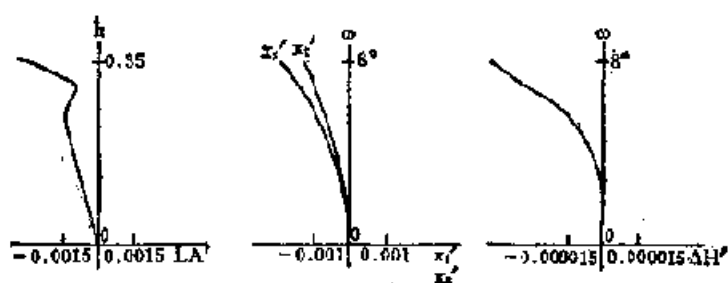
F. A. = 16°



| 序号 | 1/r | d | n_d | v_d | 序号 | 1/r | d | n_d | v_d |
|----|--------|---------|--------|-------|----|---------|--------|--------|-------|
| 1 | 1.2502 | 0.1022 | 1.7819 | 17.2 | 7 | -2.7105 | 0.0232 | 1.7231 | 29.3 |
| 2 | 0.3569 | 0.0372 | | | 8 | -0.6471 | 0.0676 | 1.7919 | 17.2 |
| 3 | 2.3802 | 0.1124 | 1.7919 | 17.2 | 9 | -2.0842 | 0.0019 | | |
| 4 | 1.1574 | 0.0145 | | | 10 | 0.6306 | 0.1352 | 1.7479 | 14.7 |
| 5 | 0.8644 | 0.0469 | 1.7685 | 26.8 | 11 | -3.8400 | 0.0483 | 1.7205 | 18.0 |
| 6 | 0.4861 | 0.2125* | | | 12 | -1.0454 | | | |

$$0.2125^* = 0.1000 + 0.1125$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.0019 | -0.000037 | 0.000088 | -0.000061 | -0.000018 | 0.14 | -0.033% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T1.7}$ |
| 100 | -0.0032 | -0.000047 | -0.0013 | -0.0013 | 0.00068 | -0.00029 | -0.000076 |
| 70 | -0.0014 | -0.000013 | -0.00068 | -0.0010 | 0.00035 | 0.00014 | -0.000064 |



编号: 01-00-056

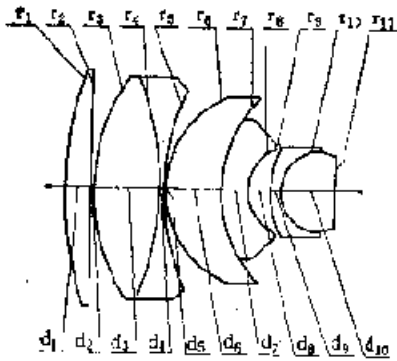
大孔径摄影镜头

E. F. L = 100

B. F. L = 7.12

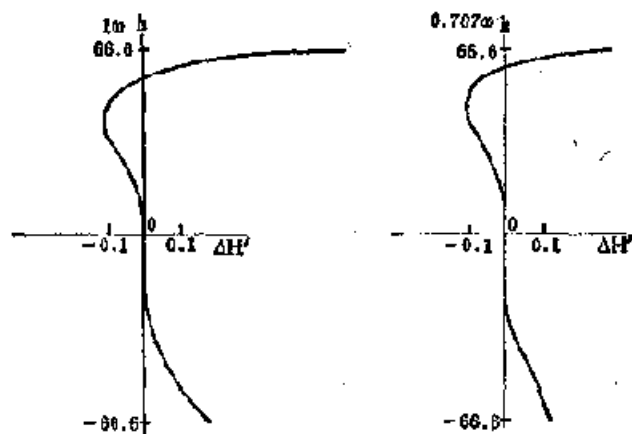
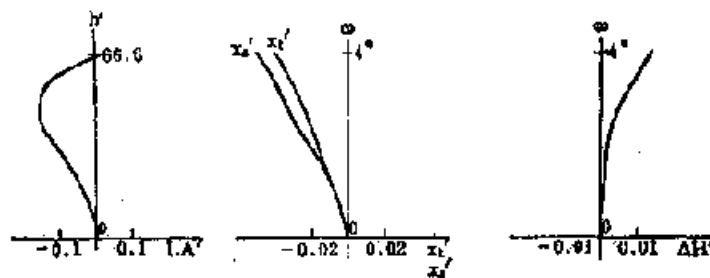
FNo. = 0.75

F. A. = 8°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|------|--------|------|----|-------|-------|--------|------|
| 1 | 206.0 | 14.5 | 1.6940 | 54.6 | 7 | 71.7 | 14.50 | 1.7343 | 28.4 |
| 2 | 8300.0 | 0.2 | | | 8 | 24.19 | 13.42 | | |
| 3 | 98.95 | 36.4 | 1.6725 | 44.7 | 9 | 57.5 | 5.44 | 1.6241 | 36.1 |
| 4 | -165.4 | 2.43 | 1.7343 | 28.4 | 10 | 21.70 | 30.0 | 1.7922 | 50.2 |
| 5 | 130.0 | 0.2 | | | 11 | ∞ | | | |
| 6 | 52.40 | 30.7 | 1.6940 | 54.6 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | Hi | QF(1ω) |
|---------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.47 | -0.084 | 0.00023 | -0.053 | 0.013 | 7 | 0.18% |
| h 或 ω % | LA' | ΔH' | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.016 | 0.013 | -0.040 | -0.050 | 0.0098 | 0.36 | -0.025 |
| 70 | -0.16 | 0.0048 | -0.024 | -0.027 | 0.0030 | 0.20 | 0.025 |



编号: 01-00-057

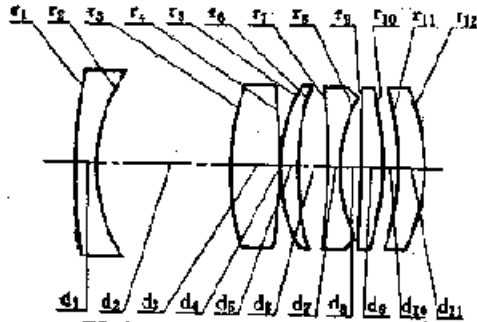
六分离广角物镜

E. F. L = 100

B. F. L = 103.11

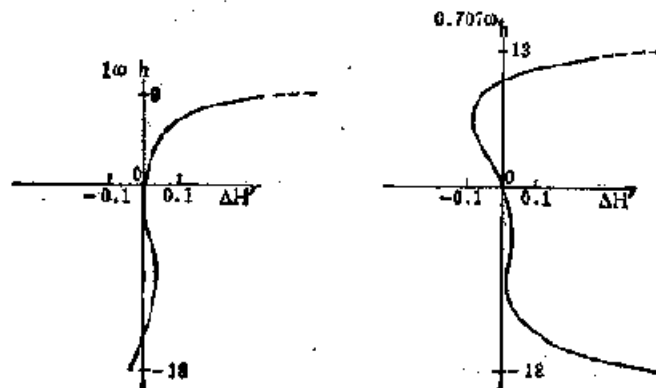
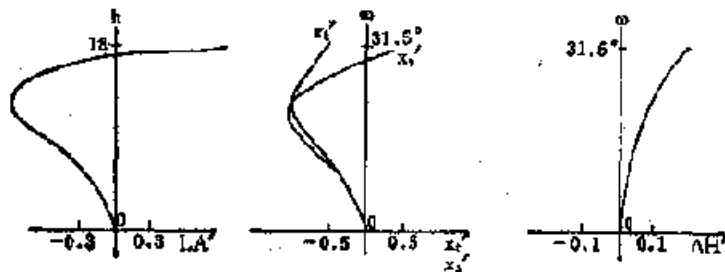
FNo. = 2.8

F. A. = 63°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|---------|-------|----|---------|------|---------|-------|
| 1 | 199.30 | 6.00 | 1.46456 | 65.79 | 7 | -175.00 | 3.25 | 1.78470 | 25.10 |
| 2 | 47.20 | 37.68 | | | 8 | 44.17 | 5.16 | | |
| 3 | 78.38 | 13.38 | 1.70180 | 41.14 | 9 | 398.04 | 6.28 | 1.58900 | 48.64 |
| 4 | 183.65 | 0.95 | | | 10 | -98.30 | 4.15 | | |
| 5 | 40.32 | 5.32 | 1.61720 | 54.04 | 11 | -84.60 | 7.45 | 1.72000 | 50.31 |
| 6 | 68.77 | 8.19 | | | 12 | -47.39 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| | -0.18 | -0.12 | -0.0090 | -0.21 | -0.16 | 61.35 | 0.30% |
| h 或 ω % | LA' | $\Delta H'$ | x_1 | x_2 | $x_1 - x_2$ | K _{r1} | K _{r0.1} |
| 100 | 0.91 | 0.19 | -3.58 | 0.25 | -0.83 | 4.59 | 0.69 |
| 70 | -0.90 | -0.088 | -1.07 | -1.09 | 0.018 | 2.03 | 0.15 |



编号: 01-00-058

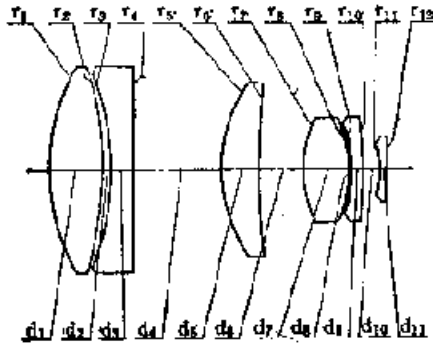
六片式珀兹伐型放映镜头

E. F. L = 100

B. F. L = 9.8

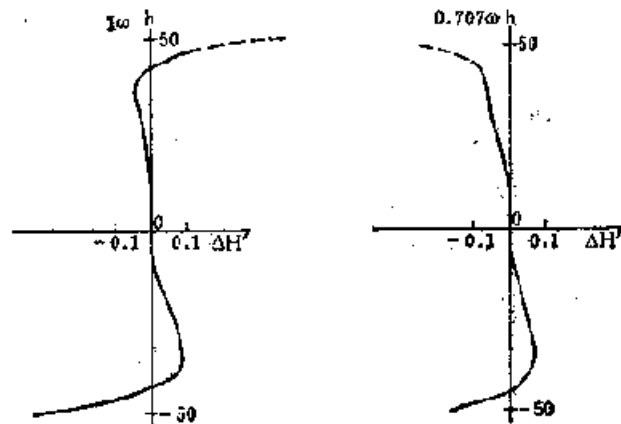
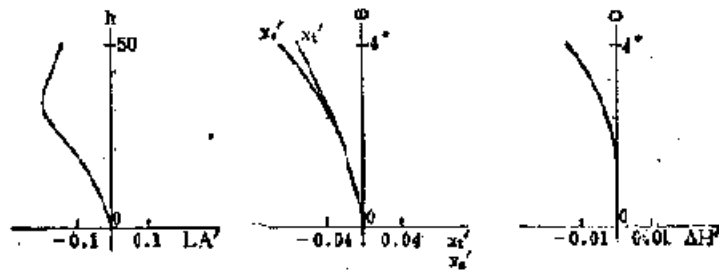
FNo. = 1.0

F. A. = 8°



| 序号 | r | d | n _D | v | 序号 | r | d | n _D | v |
|----|--------|------|----------------|------|----|-------|------|----------------|------|
| 1 | 111.4 | 28.0 | 1.517 | 64.5 | 7 | 64.6 | 25.8 | 1.620 | 60.3 |
| 2 | -180.8 | 4.9 | | | 8 | -69.1 | 0.17 | | |
| 3 | 136.0 | 13.8 | 1.720 | 29.3 | 9 | -66.6 | 6.6 | 1.720 | 29.3 |
| 4 | 3240 | 48.1 | | | 10 | -390 | 9.4 | | |
| 5 | 76.6 | 22.4 | 1.588 | 61.2 | 11 | -73.0 | 3.0 | 1.689 | 30.9 |
| 6 | 433.0 | 24.9 | | | 12 | 168.0 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QF(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.33 | 0.038 | 0.0019 | -0.047 | -0.013 | 7 | -0.19% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.14 | -0.013 | -0.078 | -0.090 | 0.012 | 6.93 | 0.012 |
| 70 | -0.19 | -0.0048 | -0.040 | -0.045 | 0.0050 | 0.56 | 0.0067 |



编号: 01-00-059

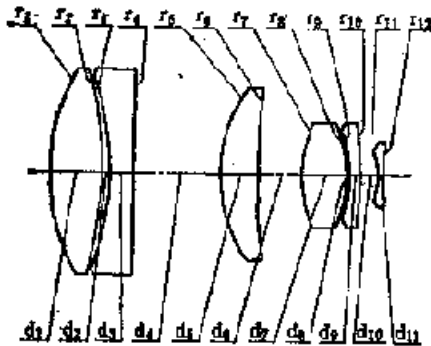
六片式珀兹伐型放映镜头

E. F. L = 100

B. F. L = 11.5

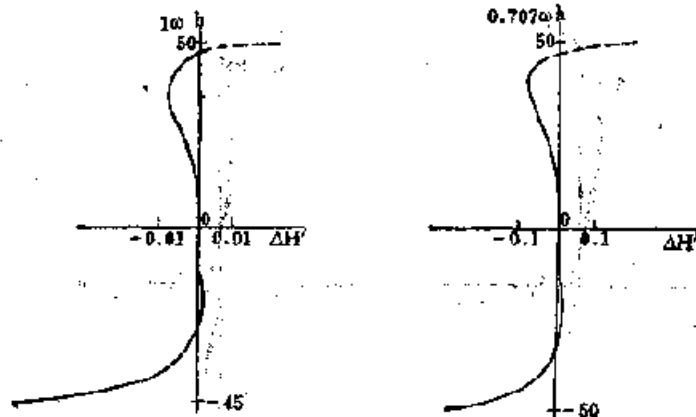
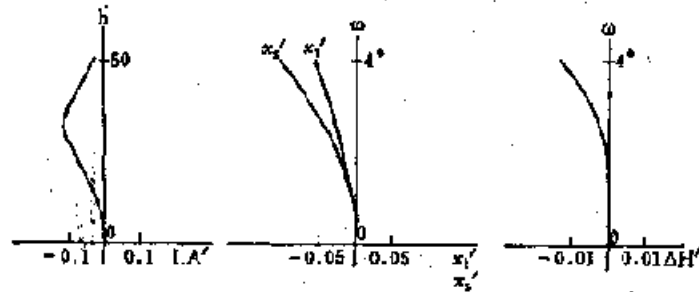
FNo. = 1.0

F. A. = 8°



| 序号 | r | d | n _D | v | 序号 | r | d | n _D | v |
|----|--------|------|----------------|------|----|-------|------|----------------|------|
| 1 | 111.4 | 28.0 | 1.517 | 64.5 | 7 | 64.6 | 25.8 | 1.620 | 60.3 |
| 2 | -180.8 | 4.9 | | | 8 | -69.1 | 0.17 | | |
| 3 | -136.0 | 13.3 | 1.720 | 29.3 | 9 | -66.5 | 5.6 | 1.720 | 29.3 |
| 4 | 9240 | 48.1 | | | 10 | -231 | 9.4 | | |
| 5 | 76.6 | 22.4 | 1.588 | 61.2 | 11 | -73.0 | 3.0 | 1.689 | 30.9 |
| 6 | 289 | 24.9 | | | 12 | 344 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.24 | -0.0069 | 0.012 | -0.069 | -0.013 | 7 | -0.19% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.044 | -0.013 | -0.052 | -0.10 | 0.054 | 7.45 | -0.062 |
| 70 | -0.11 | -0.0047 | -0.027 | -0.053 | 0.026 | 7.87 | 0.045 |



编号: 01-00-060

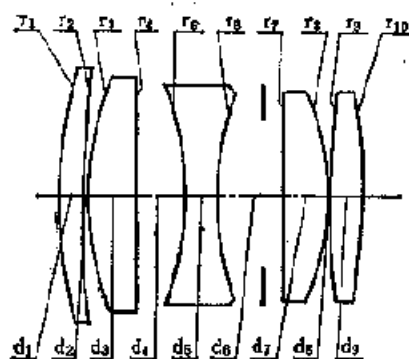
五组元物镜

E. F. L = 100

B. F. L = 68.51

FN₀ = 1.8

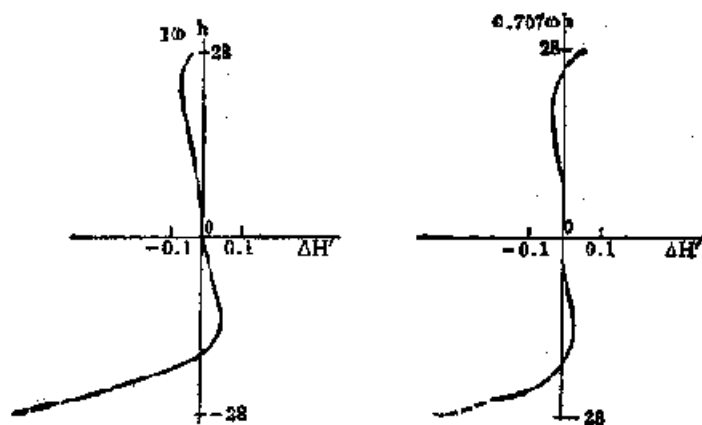
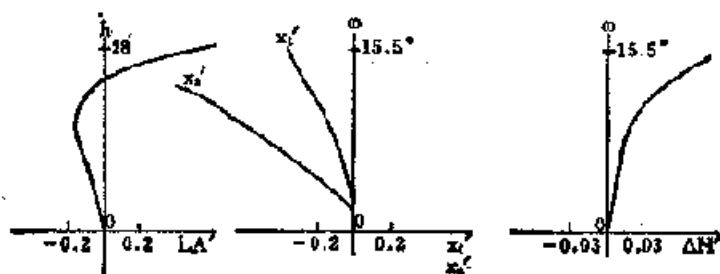
F. A. = 31°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|-------|--------|------|----|---------|--------|--------|------|
| 1 | 146.14 | 7.87 | 1.6570 | 50.9 | 6 | 81.69 | 13.86* | | |
| 2 | 350.39 | 0.79 | | | 7 | -900.00 | 12.60 | 1.6570 | 57.2 |
| 3 | 78.98 | 13.38 | 1.6570 | 50.0 | 8 | -68.50 | 0.16 | | |
| 4 | -792.12 | 13.94 | | | 9 | 218.98 | 9.45 | 1.6200 | 60.3 |
| 5 | -81.69 | 8.98 | 1.7200 | 29.3 | 10 | -166.14 | | | |

$$13.86^* = 9.45 + 4.41$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-------------|
| | -0.12 | 0.046 | 0.081 | -0.35 | 0.038 | 27.72 | 0.36% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K'_{T0.7}$ |
| 100 | 0.61 | 0.10 | -0.38 | -1.35 | 0.96 | -0.72 | -0.054 |
| 70 | -0.12 | 0.026 | -0.20 | -0.77 | 0.56 | -0.40 | -0.010 |



编号: 01-00-061

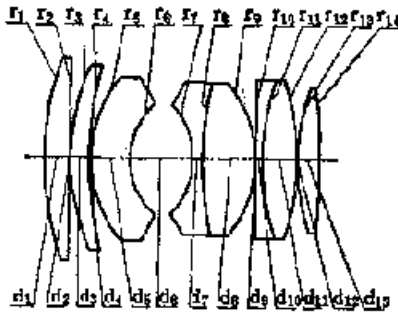
高速摄影机物镜'

E. F. L = 100

B. F. L = 60.58

FNo. = 0.85

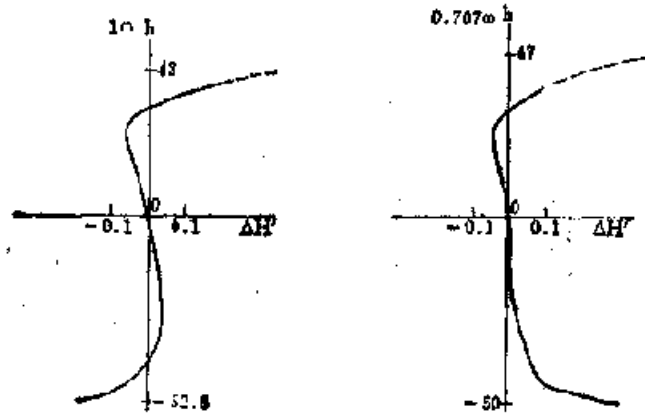
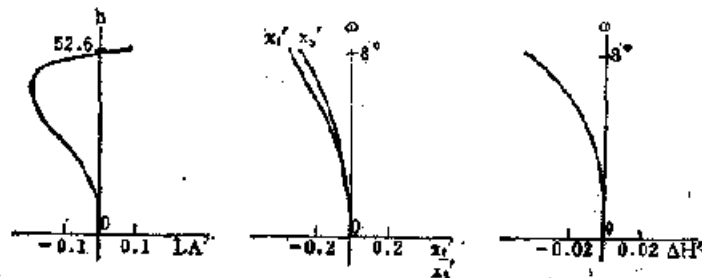
F. A. = 16°



| 序号 | r | d | nD | vD | 序号 | r | d | nD | vD |
|----|--------|-------|--------|------|----|---------|-------|--------|------|
| 1 | 146.36 | 12.18 | 1.6200 | 60.3 | 8 | 203.10 | 28.42 | 1.7200 | 59.3 |
| 2 | 600.13 | 0.41 | | | 9 | -61.98 | 0.41 | | |
| 3 | 106.73 | 12.18 | 1.6200 | 60.3 | 10 | -915.62 | 4.11 | 1.5900 | 39.2 |
| 4 | 263.48 | 0.41 | | | 11 | 132.13 | 18.27 | 1.6910 | 54.8 |
| 5 | 62.10 | 21.11 | 1.8410 | 28.1 | 12 | -132.13 | 0.41 | | |
| 6 | 36.26 | 25.53 | | | 13 | 118.00 | 12.18 | 1.6910 | 54.8 |
| 7 | -41.54 | 5.08 | 1.7410 | 28.1 | 14 | -405.86 | | | |

$\Sigma d = 150.70$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|------------|
| | -0.24 | -0.053 | -0.0058 | -0.15 | -0.044 | 14.09 | -0.30% |
| h 或 ω % | LA' | AH' | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K_{T0.7}$ |
| 100 | 0.067 | -0.043 | -0.35 | -0.29 | -0.065 | 1.98 | 0.096 |
| 70 | -0.17 | -0.015 | -0.16 | -0.14 | -0.021 | 1.50 | 0.098 |



编号: 01-00-062

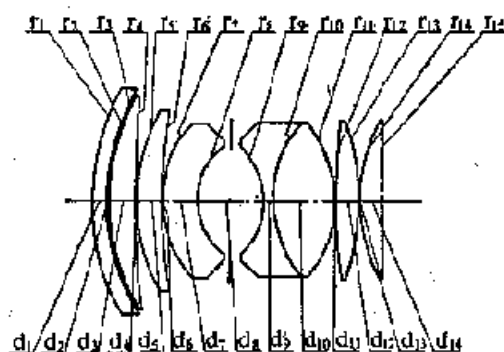
七组元高速摄影机镜头

E. F. L = 100

B. F. L = 60.64

FNo. = 0.95

F. A. = 16'

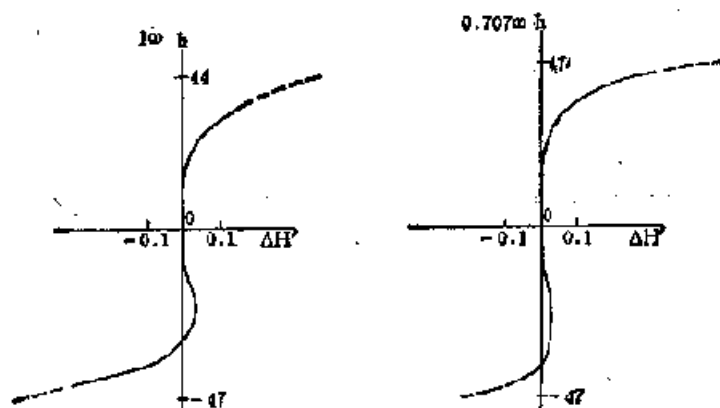
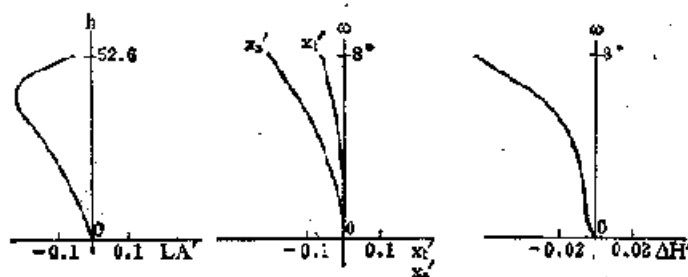


| 序号 | r | d | n _e | v _e | 序号 | r | d | n _e | v _e |
|----|---------|--------|----------------|----------------|----|---------|-------|----------------|----------------|
| 1 | 159.55 | 16.35 | 1.62287 | 60.1 | 9 | -39.25 | 4.48 | 1.75846 | 26.8 |
| 2 | 3663.75 | 0.19 | | | 10 | 478.43 | 28.42 | 1.71615 | 53.7 |
| 3 | 229.09 | 10.32 | 1.66105 | 57.1 | 11 | -57.62 | 0.19 | | |
| 4 | 607.77 | 6.23 | | | 12 | 317.71 | 17.52 | 1.59142 | 61.0 |
| 5 | ∞ | 8.37 | 1.58482 | 40.6 | 13 | -116.05 | 0.19 | | |
| 6 | 597.28 | 0.19 | | | 14 | 94.69 | 16.35 | 1.69100 | 54.6 |
| 7 | 57.82 | 20.05 | 1.79180 | 25.9 | 15 | 509.65 | | | |
| 8 | 39.05 | 36.21* | | | | | | | |

$\Sigma d = 155.06$

$36.21^* = 18.00 + 18.21$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QF(1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.35 | 0.047 | 0.045 | -0.16 | -0.068 | 14.05 | -0.47% |
| h 或 ω % | I.A' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.047 | -0.066 | -0.061 | -0.21 | 0.148 | 0.34 | 0.080 |
| 70 | -0.21 | -0.023 | -0.028 | -0.10 | 0.079 | 0.28 | 0.057 |



编号: 01-00-063

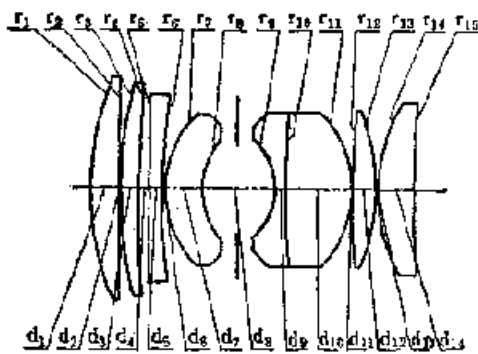
七组元高速摄影机镜头

E. F. L = 100

B. F. L = 57.28

FN₀ = 0.95

F. A. = 16°

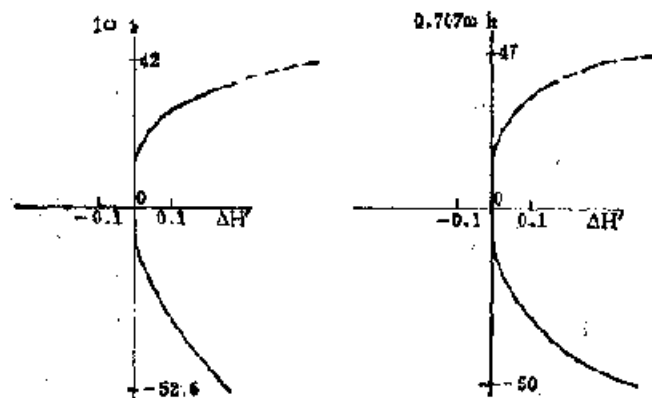
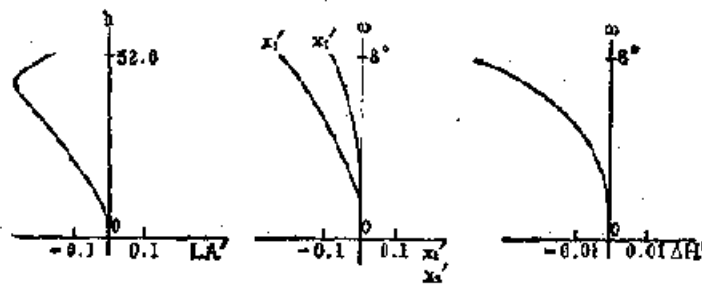


| 序号 | r | d | n _e | v _e | 序号 | r | d | n _e | v _e |
|----|--------|--------|----------------|----------------|----|---------|-------|----------------|----------------|
| 1 | 142.76 | 8.72 | 1.67245 | 44.7 | 9 | -44.42 | 6.30 | 1.74703 | 27.8 |
| 2 | 190.17 | 0.44 | | | 10 | 71.19 | 37.93 | 1.73692 | 50.8 |
| 3 | 139.32 | 17.44 | 1.62541 | 58.6 | 11 | -71.19 | 0.44 | | |
| 4 | 540.20 | 0.44 | | | 12 | 399.00 | 13.08 | 1.71615 | 53.7 |
| 5 | 114.51 | 15.69 | 1.62237 | 60.1 | 13 | -149.56 | 0.44 | | |
| 6 | 282.61 | 0.44 | | | 14 | 94.64 | 15.69 | 1.71615 | 53.7 |
| 7 | 66.70 | 20.92 | 1.74703 | 27.8 | 15 | 640.26 | | | |
| 8 | 39.28 | 40.54* | | | | | | | |

$\Sigma d = 178.31$

40.54* = 20.00 + 20.54

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.26 | 0.070 | 0.043 | -0.17 | -0.041 | 14.05 | -0.26% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T2.7}$ |
| 100 | -0.15 | -0.037 | -0.078 | -0.22 | 0.14 | 1.73 | 0.21 |
| 70 | -0.21 | -0.013 | -0.036 | -0.11 | 0.076 | 1.05 | 0.16 |



编号: 01-00-064

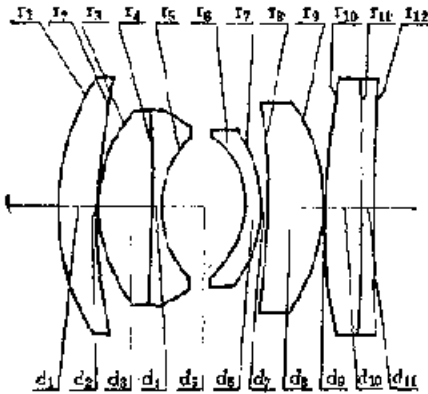
五分离大相对孔径广角摄影物镜

E. F. L = 1

B. F. L = 0.56

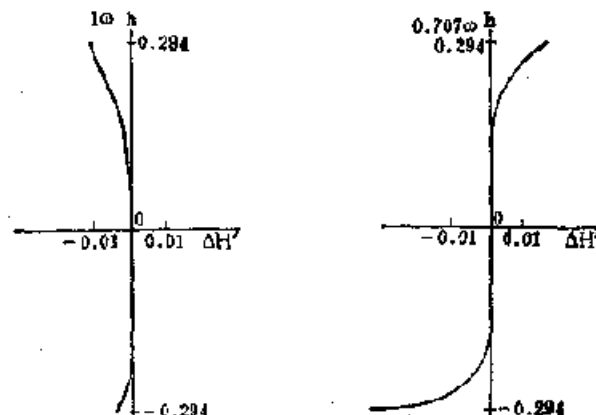
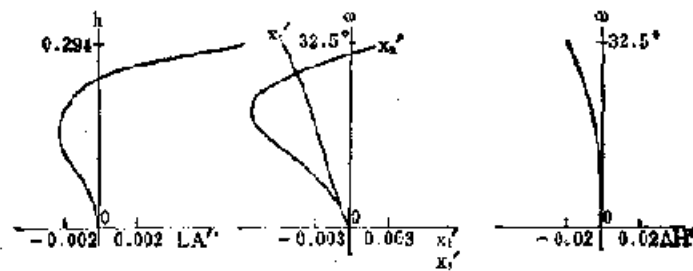
FNo. = 1.7

F. A. = 65°



| 序号 | r | d | n _d | v _d | 序号 | r | d | n _d | v _d |
|----|---------|--------|----------------|----------------|----|---------|--------|----------------|----------------|
| 1 | 0.6329 | 0.1056 | 1.6937 | 53.5 | 7 | -0.3000 | 0.0155 | | |
| 2 | 1.5181 | 0.0023 | | | 8 | -1.8252 | 0.1554 | 1.8038 | 45.8 |
| 3 | 0.4086 | 0.1414 | 1.6519 | 58.3 | 9 | -0.4800 | 0.0018 | | |
| 4 | -4.602 | 0.0264 | 1.6131 | 37.0 | 10 | 1.9557 | 0.0948 | 1.6424 | 53.1 |
| 5 | 0.2548 | 0.2563 | | | 11 | -3.0997 | 0.0365 | 1.7400 | 28.2 |
| 6 | -0.2073 | 0.0451 | 1.7670 | 20.5 | 12 | 0.0439 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(ω) |
|---------|--------------|--------------|--------------|--------------|--------------|---------|-----------|
| | -0.0023 | 0.00058 | 0.00082 | -0.0058 | -0.0040 | 0.63 | -3.05% |
| h 或 ω % | LA' | ΔH' | x'_t | x'_s | x'_t - x'_s | K'_{f1} | K'_{f0.7} |
| 100 | 0.0084 | -0.019 | -0.0054 | 0.0017 | -0.0072 | -0.0076 | -0.0030 |
| 70 | -0.0018 | -0.0049 | -0.0038 | -0.0077 | 0.0039 | -0.0078 | -0.00015 |



编号: 01-00-065

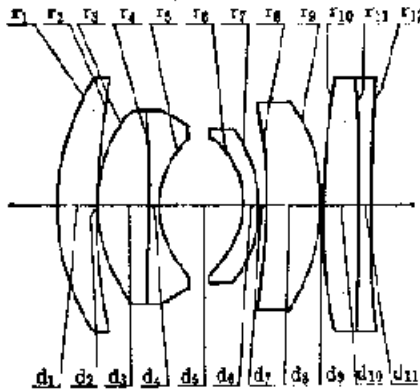
五分离大相对孔径广角摄影物镜

E.F.L=1

B.F.L=0.55

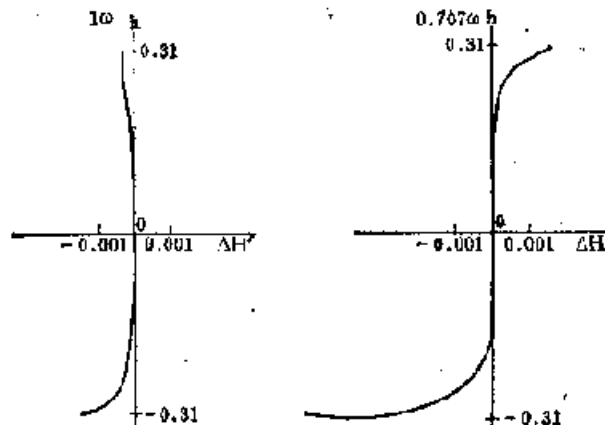
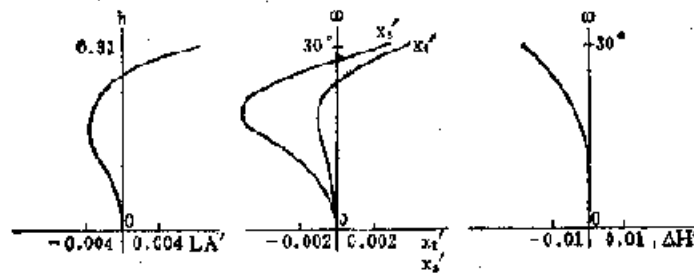
FNo. -1.6

F.A. -60°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|---------|--------|--------|-------|----|---------|--------|--------|-------|
| 1 | 0.8208 | 0.1038 | 1.7338 | 51.0 | 7 | -0.3573 | 0.0021 | | |
| 2 | 1.3893 | 0.0014 | | | 8 | -1.9632 | 0.1849 | 1.3038 | 46.8 |
| 3 | 0.4197 | 0.1438 | 1.8775 | 55.5 | 9 | -0.4874 | 0.0021 | | |
| 4 | -5.0461 | 0.0277 | 1.6364 | 35.4 | 10 | 1.8744 | 0.0945 | 1.8424 | 58.1 |
| 5 | 0.2588 | 0.2560 | | | 11 | -2.1115 | 0.0363 | 1.7400 | 28.2 |
| 6 | -0.2659 | 0.0455 | 1.8055 | 25.5 | 12 | 5.5331 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|--------------|----------|-----------------|
| | -0.0033 | 0.00011 | 0.0010 | 0.0050 | -0.0048 | 0.57 | -3.15% |
| h 或 ω % | LA' | $\Delta H'$ | x_2 | x_3 | $x_1 - x_3$ | K_{T1} | $K_{Tc.7}$ |
| 100 | 0.0083 | -0.018 | 0.0040 | 0.0025 | 0.0015 | -0.0080 | -0.0017 |
| 70 | -0.0028 | -0.0047 | -0.0011 | -0.0055 | 0.0044 | -0.021 | -0.0012 |



编号: 01-00-066

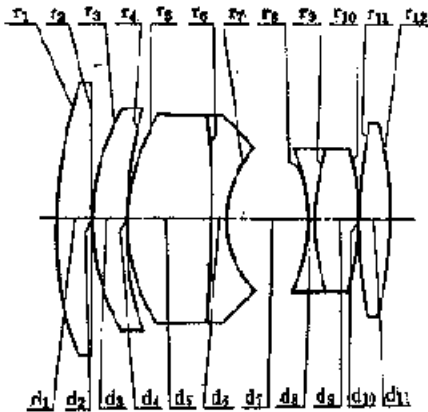
扩展的高斯型大孔径物镜

E. F. L = 100

B. F. L = 41.21

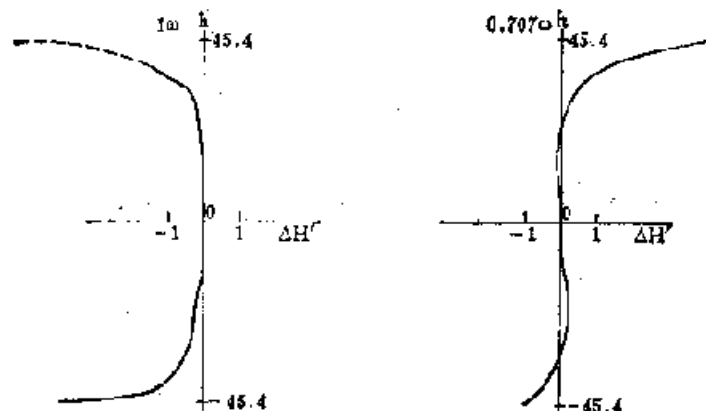
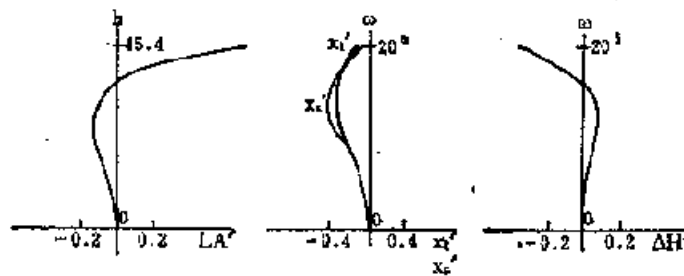
FNo. = 1.1

F.A. = 40°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|--------|-------|----|--------|--------|--------|-------|
| 1 | 111.5 | 9.515 | 1.7201 | 50.3 | 7 | 28.0 | 22.235 | | |
| 2 | 352.6 | 0.1 | | | 8 | -44.4 | 1.3 | 1.5481 | 45.9 |
| 3 | 65.7 | 8.545 | 1.7242 | 51.0 | 9 | 80.8 | 11.36 | 1.7440 | 44.9 |
| 4 | 104.1 | 0.97 | | | 10 | -75.4 | 0.1 | | |
| 5 | 52.4 | 22.8 | 1.6422 | 58.1 | 11 | 150.4 | 7.96 | 1.7342 | 51.0 |
| 6 | -329.1 | 4.175 | 1.7184 | 29.5 | 12 | -106.5 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.33 | 0.078 | -0.046 | -0.63 | 0.48 | 36.39 | -0.99% |
| h 或 ω % | LA' | $\Delta H'$ | x'_e | x'_s | $x'_i - x'_s$ | K'_{F1} | $K'_{F0.7}$ |
| 100 | 0.72 | -0.36 | -0.17 | -0.015 | -0.15 | -10.78 | -0.35 |
| 70 | -0.13 | 0.058 | -0.40 | -0.47 | 0.064 | 1.59 | 0.20 |



编号: 01-00-067

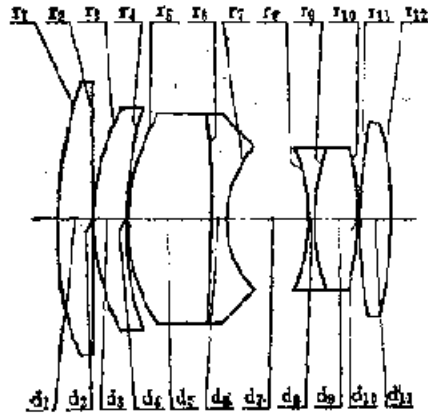
扩展的高斯型大孔径物镜

E. F. L = 100

B. F. L = 40.08

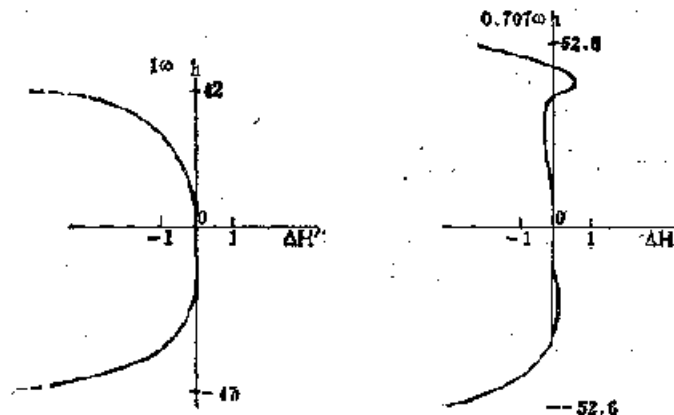
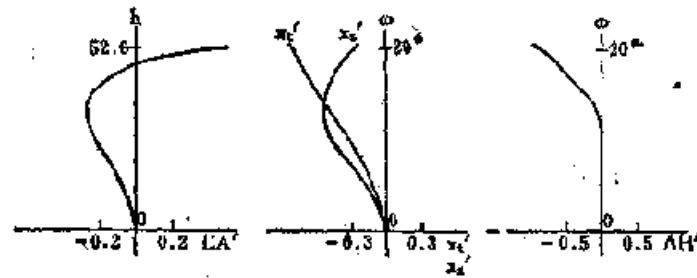
FNo. = 0.95

F. A. = 40°



| 序号 | r | d | n _d | v _d | 序号 | r | d | n _d | v _d |
|----|--------|--------|----------------|----------------|----|--------|-------|----------------|----------------|
| 1 | 136.1 | 10.175 | 1.7550 | 53.3 | 7 | 29.8 | 24.6 | | |
| 2 | 482.9 | 0.2 | | | 8 | -41.1 | 1.73 | 1.5235 | 60.6 |
| 3 | 69.8 | 9.31 | 1.7885 | 50.45 | 9 | 92.0 | 10.57 | 1.7440 | 44.9 |
| 4 | 105.6 | 0.93 | | | 10 | -71.4 | 0.2 | | |
| 5 | 58.1 | 26.13 | 1.6516 | 58.5 | 11 | 136.3 | 8.24 | 1.7550 | 53.3 |
| 6 | -215.7 | 4.12 | 1.7215 | 29.3 | 12 | -105.6 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-------------|
| | -0.66 | 0.042 | -0.090 | -0.68 | 0.23 | 36.43 | -2.74% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K'_{T0.7}$ |
| 100 | 0.50 | -0.99 | -0.77 | -0.26 | -0.50 | -39.54 | -1.95 |
| 70 | -0.27 | -0.11 | -0.55 | -0.55 | -0.0031 | -2.43 | -0.15 |



编号: 01-00-068

柯克三片型摄影物镜

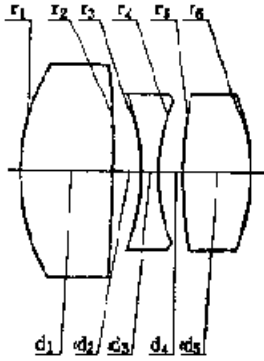
E. F. L = 100

B. F. L = 71

FNo. = 1.9

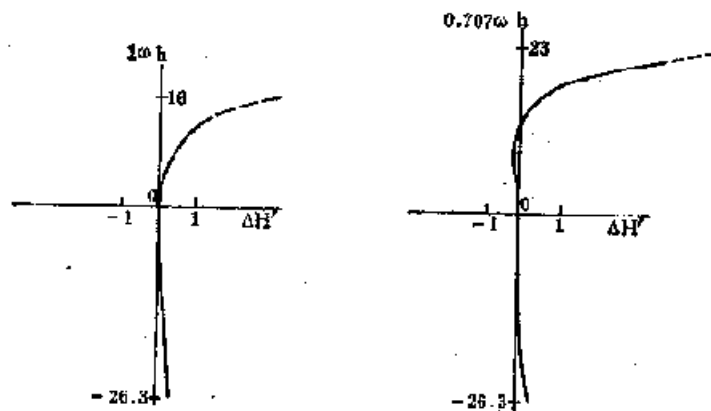
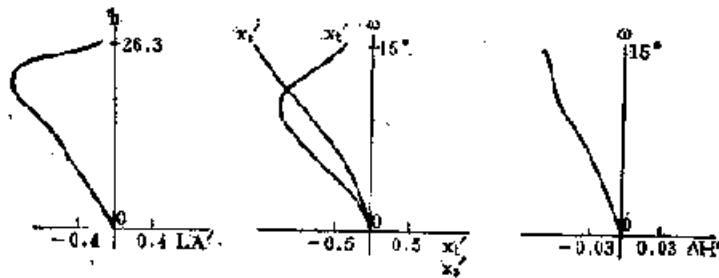
F. A. = $\pm 15^\circ$

$Lp'_1 = -22.0$



| 序号 | r | d | n_D | v | 序号 | r | d | n_D | v |
|----|--------|-------|-------|------|----|-------|------|-------|------|
| | | 22.0* | | | | | | | |
| 1 | 57.4 | 25.5 | 1.70 | 58.0 | 4 | 48.6 | 6.6 | | |
| 2 | -351.0 | 7.7 | | | 5 | 119.0 | 19.7 | 1.70 | 58.0 |
| 3 | -63.3 | 4.5 | 1.67 | 32.0 | 6 | -63.5 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | Hl | QF(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.45 | -0.26 | -0.11 | -0.22 | -0.11 | 26.37 | -0.25% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.23 | -0.068 | -0.40 | -1.63 | 1.23 | 4.60 | 3.94 |
| 70 | -1.19 | -0.054 | -1.32 | -1.05 | -0.26 | 5.69 | 0.62 |



编号: 01-00-069

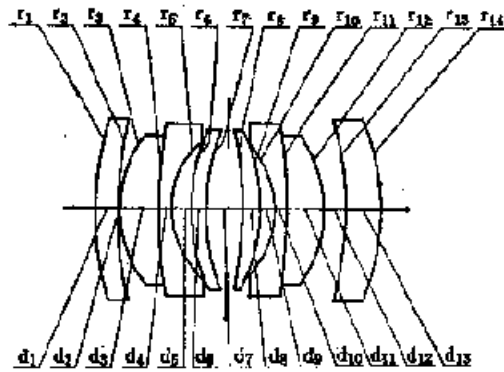
八片式对称式摄影物镜

E. F. L = 100

B. F. L = 69.09

FN₀ = 2.0

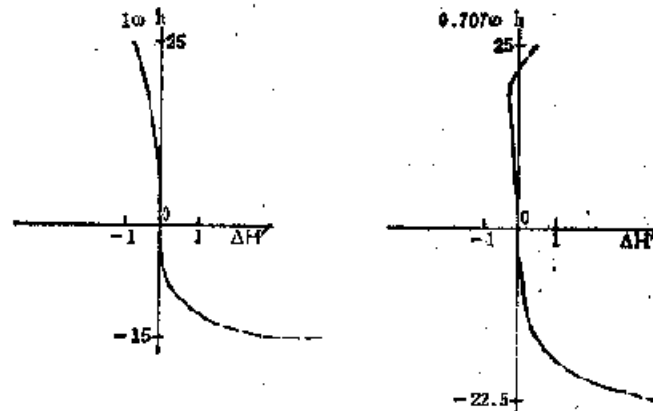
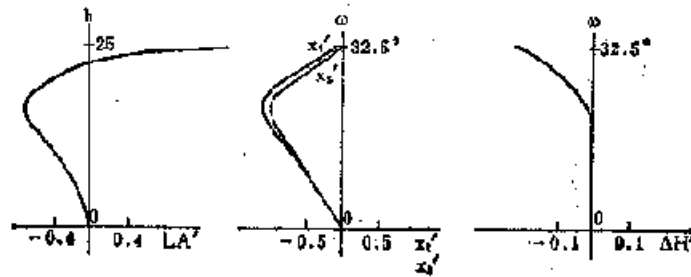
F. A. = 65°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|--------|--------|----------------|----------------|----|---------|-------|----------------|----------------|
| 1 | 83.93 | 6.90 | 1.7200 | 42.0 | 8 | -113.48 | 4.41 | 1.6910 | 54.8 |
| 2 | 117.03 | 0.08 | | | 9 | -50.32 | 3.94 | | |
| 3 | 32.11 | 10.40 | 1.7200 | 47.5 | 10 | -25.32 | 2.99 | 1.6680 | 32.3 |
| 4 | 147.76 | 2.99 | 1.6490 | 33.8 | 11 | -182.00 | 10.10 | 1.7200 | 47.5 |
| 5 | 23.64 | 5.40 | | | 12 | -33.38 | 5.93 | | |
| 6 | 47.36 | 4.41 | 1.6610 | 54.8 | 13 | -81.72 | 8.90 | 1.7440 | 45.6 |
| 7 | 58.32 | 10.01* | | | 14 | -62.06 | | | |

10.01* = 5.91 + 4.10

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------------|
| | -0.36 | -0.072 | 0.061 | -0.40 | 0.016 | 63.71 | -0.34% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x_1 | $x'_1 - x_1$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 1.54 | -0.22 | -0.14 | -0.032 | -0.11 | -40.07 | 3.95 |
| 70 | -0.70 | -0.023 | -1.12 | -1.01 | -0.11 | -28.85 | 0.39 |



编号: 01-00-070

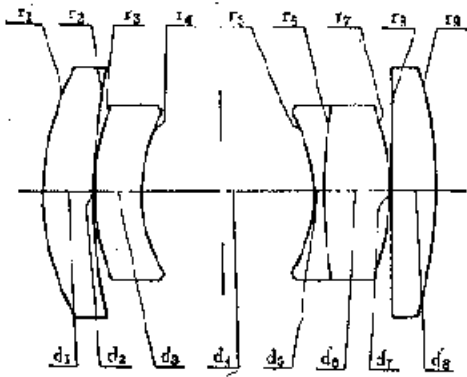
改进的四组元高斯放映物镜

E. F. L = 100

B. F. L = 71.28

FNo. = 2.8

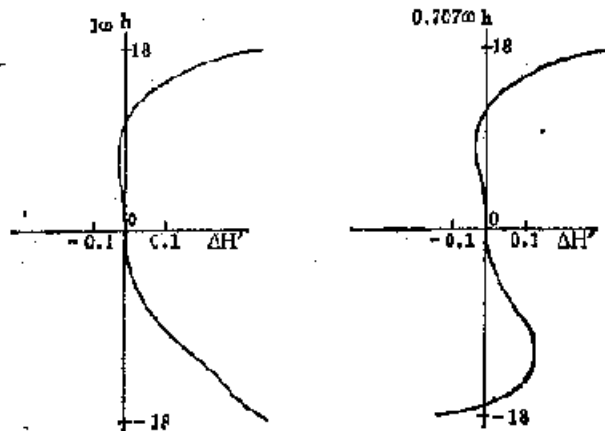
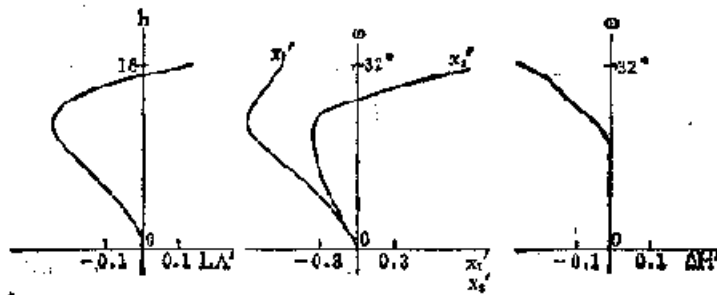
F. A. = 64°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|-------|--------|--------|-------|----|---------|------|--------|-------|
| 1 | 33.14 | 7.43 | 1.6200 | 60.3 | 6 | 72.28 | 9.06 | 1.7200 | 17.5 |
| 2 | 83.45 | 0.14 | | | 7 | -30.80 | 0.14 | | |
| 3 | 29.71 | 6.29 | 1.7506 | 27.8 | 8 | -331.43 | 6.03 | 1.7506 | 27.8 |
| 4 | 20.74 | 24.06* | | | 9 | -59.45 | | | |
| 5 | 22.06 | 1.43 | 1.7200 | 29.3 | | | | | |

24.06* = 12.03 + 12.03

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.063 | 0.029 | -0.027 | -0.11 | 0.024 | 62.45 | -0.41% |
| h 或 ω % | $\Delta A'$ | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.1}$ |
| 100 | 0.13 | -0.25 | -0.67 | 0.91 | -1.58 | 0.38 | 0.13 |
| 70 | 0.25 | -0.086 | -0.95 | -0.43 | -0.51 | 0.13 | 0.071 |



编号, 01-00-071

具有负前组及多镜片正组的广角物镜

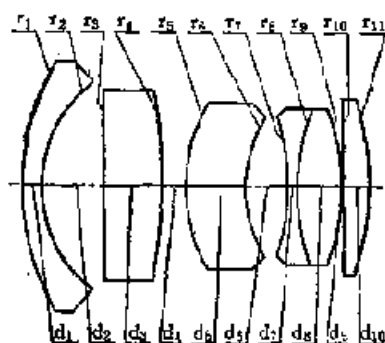
E. F. L = 100

B. F. L = 105.2

FNo. = 2.8

F. A. = 68°

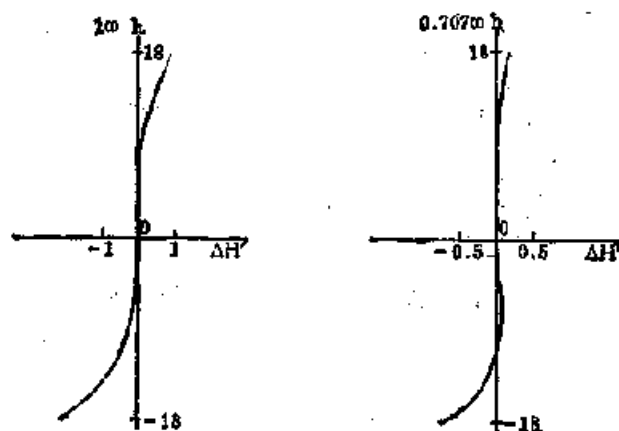
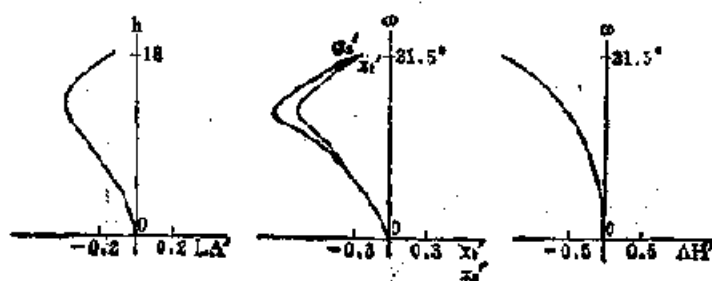
$Lp'_6 = 3$



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|---------|-------|---------|-------|----|---------|-------|---------|-------|
| 1 | 67.56 | 5.62 | 1.47236 | 67.10 | 7 | -59.42 | 2.25 | 1.62410 | 36.10 |
| 2 | 35.23 | 16.87 | | | 8 | 51.90 | 12.65 | 1.62287 | 60.06 |
| 3 | -954.17 | 16.59 | 1.69660 | 53.18 | 9 | -51.90 | 0.28 | | |
| 4 | -133.68 | 7.03 | | | 10 | -478.21 | 7.03 | 1.69400 | 54.80 |
| 5 | 43.89 | 16.87 | 1.74793 | 44.85 | 11 | -82.57 | | | |
| 6 | 39.19 | 11.25 | | | | | | | |

$\Sigma d = 96.44$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(10°) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.089 | 0.027 | 0.011 | -0.18 | -0.45 | 61.28 | -2.29% |
| h 或 $\omega\%$ | $\Delta A'$ | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.13 | -1.40 | -0.24 | -0.23 | -0.014 | -0.85 | -0.21 |
| 70 | -0.40 | -0.52 | -0.72 | 0.94 | 0.22 | -0.34 | -0.040 |



编号: 01-00-072

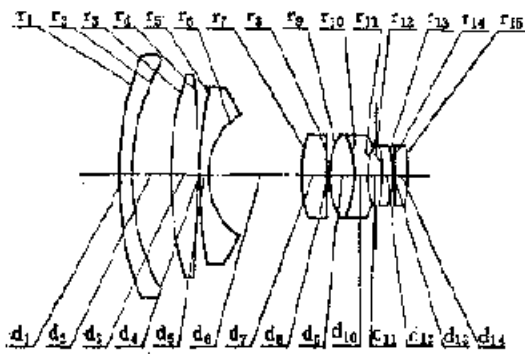
具有负前组及多镜片正组的广角物镜

E. F. L = 100

B. F. L = 146.58

FNo. = 2.8

F. A. = 80°

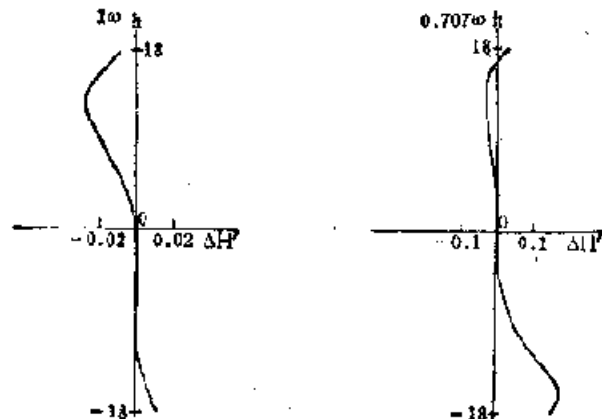
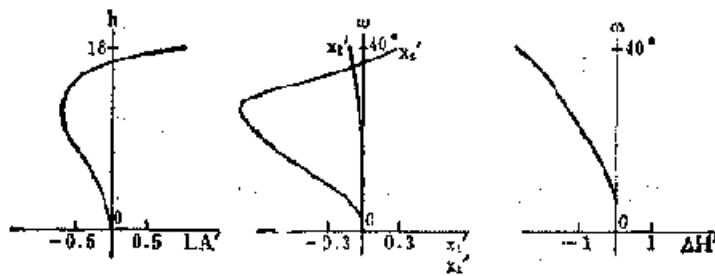


| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|----------|-------|---------|-------|----|---------|--------|---------|-------|
| 1 | 266.77 | 9.81 | 1.51871 | 63.96 | 9 | 67.32 | 15.69 | 1.55440 | 63.22 |
| 2 | 121.58 | 31.38 | | | 10 | -120.32 | 13.73 | 1.72732 | 29.07 |
| 3 | 286.39 | 23.54 | 1.72823 | 37.81 | 11 | 62.14 | 11.77* | | |
| 4 | -1006.28 | 0.39 | | | 12 | -127.78 | 9.81 | 1.62287 | 60.06 |
| 5 | 430.21 | 7.58 | 1.62287 | 60.06 | 13 | 80.54 | 0.39 | | |
| 6 | 59.63 | 76.50 | | | 14 | 366.69 | 9.81 | 1.62287 | 60.06 |
| 7 | 129.11 | 23.54 | 1.74703 | 27.82 | 15 | -144.88 | | | |
| 8 | ∞ | 2.73 | | | | | | | |

$\Sigma d = 236.96$

$11.77^* = 0.00 + 5.77$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|------------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.16 | 0.068 | 0.012 | -0.21 | -1.11 | 83.88 | -3.42% |
| h 或 ω % | LA' | AH' | x_1' | x_2' | $x_1' - x_2'$ | K_{f1} | $K_{f0.7}$ |
| 100 | 1.04 | -2.86 | -0.12 | 0.25 | -0.37 | 0.0030 | -0.0094 |
| 70 | -0.69 | -1.41 | -0.064 | -1.04 | 0.97 | 0.094 | 0.046 |



编号: 01-00-073

具有一个胶合组的三组元镜头

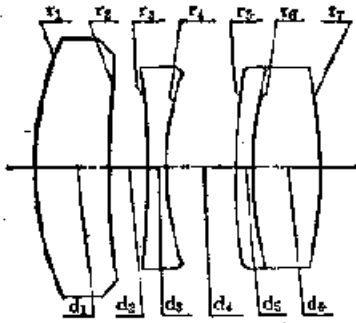
E. F. L = 100

B. F. L = 79.91

FNo. = 2.8

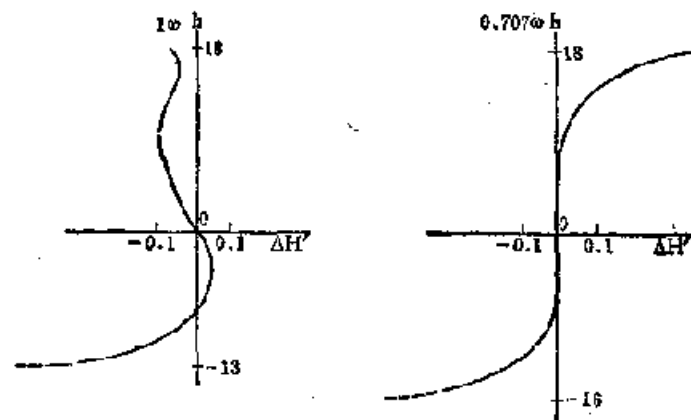
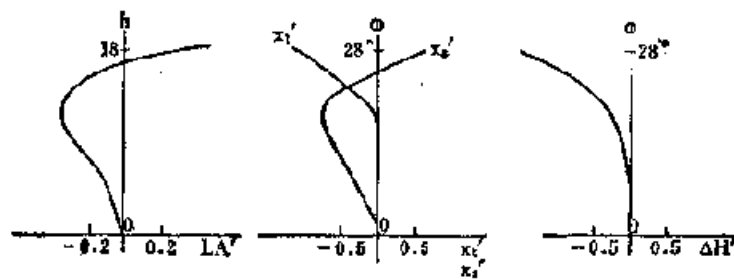
F. A. = 56°

$Lp'_4 = 0.5$



| 序号 | r | d | n_D | v | 序号 | r | d | n_D | v |
|----|---------|-------|--------|-------|----|---------|------|--------|-------|
| 1 | 89.266 | 10.52 | 1.7130 | 53.89 | 5 | 263.753 | 2.39 | 1.6261 | 39.10 |
| 2 | 283.685 | 5.69 | | | 6 | 50.234 | 9.49 | 1.7550 | 53.28 |
| 3 | 99.940 | 2.53 | 1.6236 | 36.75 | 7 | -69.533 | | | |
| 4 | 35.715 | 9.83 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | OP(1%) |
|----------------|--------------|--------------|--------------|--------------|-------------------------|----------|------------|
| | -0.094 | -0.00687 | 0.040 | -0.22 | -0.20 | 53.16 | -2.81% |
| h 或 ω % | LA' | $\Delta H'$ | κ'_t | κ'_s | $\kappa'_t - \kappa'_s$ | K_{T1} | $K_{Tc.1}$ |
| 100 | 0.42 | -1.49 | -1.21 | 0.67 | -1.88 | -0.93 | -0.20 |
| 70 | -0.36 | -0.34 | -0.14 | -0.74 | 0.59 | -0.20 | -0.023 |



编号: 01-00-074

具有一个胶合组的三组元镜头

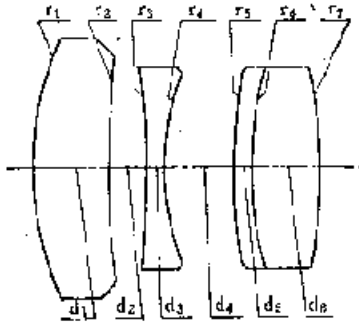
E. F. L=100

B. F. L=82.62

FNo. =2.8

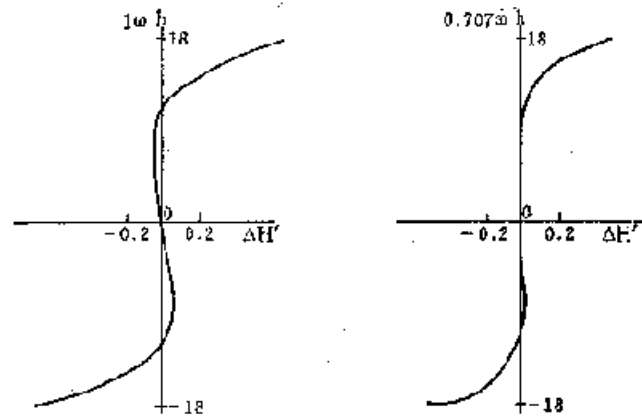
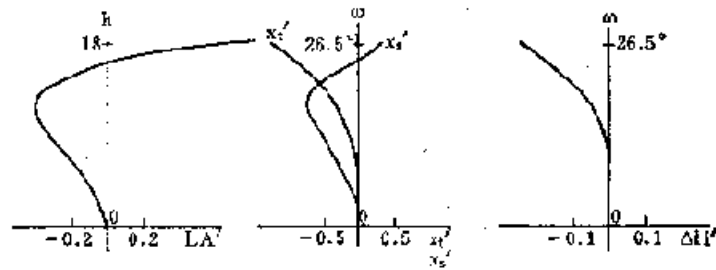
F. A. =53°

Lp₄'=0.5



| 序号 | r | d | n _D | v | 序号 | r | d | n _D | v |
|----|---------|------|----------------|-------|----|---------|------|----------------|-------|
| 1 | 42.348 | 8.48 | 1.7335 | 51.04 | 5 | ∞ | 2.55 | 1.6204 | 37.97 |
| 2 | 895.654 | 7.25 | | | 6 | 53.647 | 7.61 | 1.7440 | 44.90 |
| 3 | -72.448 | 1.97 | 1.6547 | 32.87 | 7 | -52.794 | | | |
| 4 | 39.706 | 8.95 | | | | | | | |

| | ΣS ₁ | ΣS ₂ | ΣS ₃ | ΣS ₄ | ΣS ₅ | HI | QP(1∞) |
|---------|-----------------|-----------------|------------------|------------------|-----------------------------------|-----------------|-------------------|
| | -0.11 | 0.0030 | 0.032 | -0.19 | -0.041 | 49.75 | -0.47% |
| h 或 ω % | LA' | ΔII' | x ₁ ' | x ₂ ' | x ₁ '-x ₂ ' | K _{F1} | K _{I0.7} |
| 100 | 0.79 | -0.23 | -1.21 | 0.27 | -1.492 | 0.012 | 0.023 |
| 70 | -0.39 | -0.061 | -0.30 | -0.72 | 0.41 | -0.0083 | -0.0045 |



编号: 01-00-075

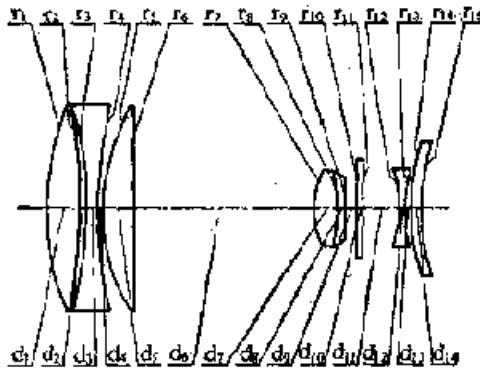
改型珀兹伐镜头

E. F. L = 1

B. F. L = 0

FN₀ = 1.2

F. A. = 12°

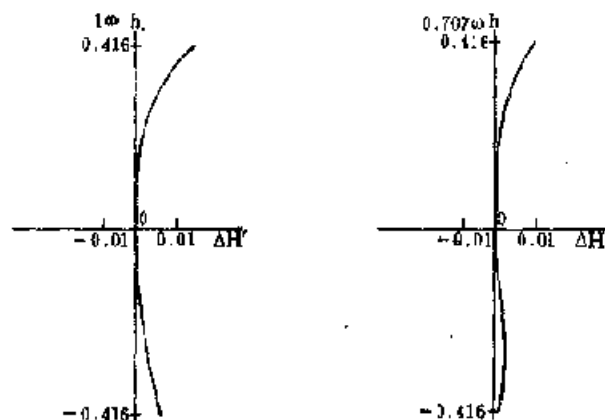
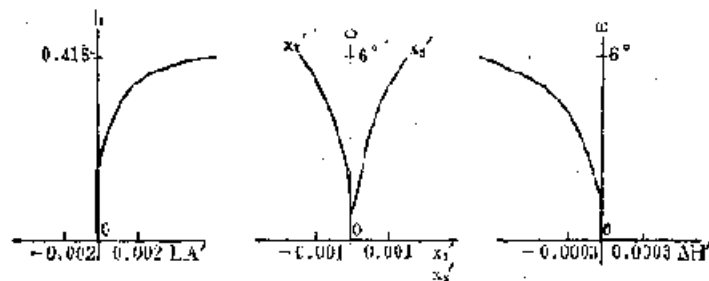


| 序号 | r | d | IR | VE | 序号 | r | d | IR | VE |
|----|--------|--------|-------|------|----|--------|--------|---------|------|
| 1 | 1.133 | 0.149 | 1.605 | 60.5 | 9 | 5.88 | 0.0516 | | |
| 2 | -2.712 | 0.030 | | | 10 | ∞ | 0.030 | 1.51829 | |
| 3 | -1.471 | 0.0485 | 1.792 | 25.9 | 11 | ∞ | 0.1585 | | |
| 4 | 2.117 | 0.015 | | | 12 | -0.433 | 0.015 | 1.813 | 25.3 |
| 5 | 0.869 | 0.1365 | 1.623 | 60.1 | 13 | 0.640 | 0.0212 | | |
| 6 | ∞ | 0.786 | | | 14 | 0.948 | 0.046 | 1.51829 | |
| 7 | 0.358 | 0.103 | 1.625 | 28.6 | 15 | 0.948 | | | |
| 8 | 0.564 | 0.0273 | 1.813 | 25.3 | | | | | |

* 表示滤色片。

** 表示脱膜。

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|---------|--------------|--------------|------------------|------------------|-----------------------------------|-----------------|-------------------|
| | -0.00014 | 0.00099 | -0.00039 | 0.00084 | -0.00069 | 0.10 | -0.88% |
| h 或 ω % | LA' | ΔH' | x ₁ ' | x ₂ ' | x ₁ '-x ₂ ' | K _{T1} | K _{T2.7} |
| 100 | 0.0067 | -0.00097 | -0.0016 | 0.0015 | -0.0029 | 0.010 | 0.0037 |
| 70 | 0.0010 | -0.00032 | -0.00060 | 0.00074 | -0.0013 | 0.0051 | 0.0019 |



编号: 01-00-076

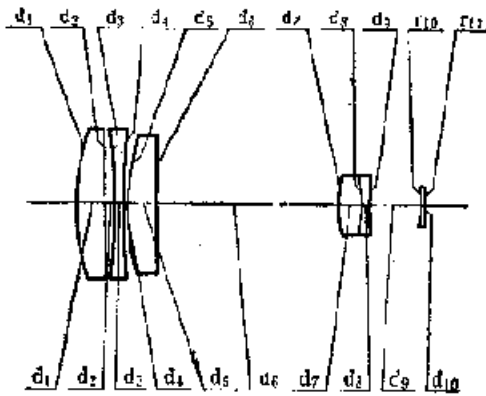
改型珀兹伐镜头

E. F. L = 100

B. F. L = 5.33

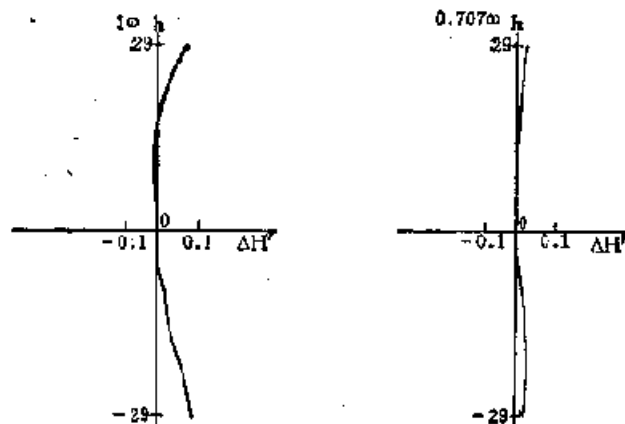
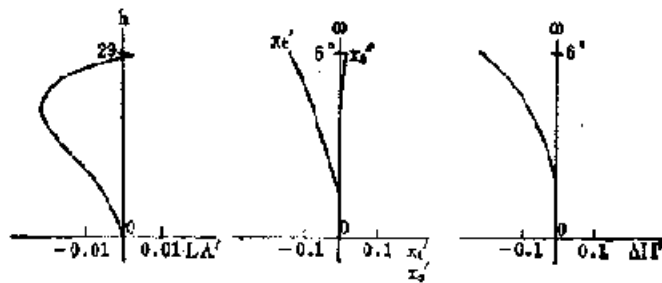
FNo. = 1.7

F. A. = 12°



| 序号 | r | d | n _E | v _E | 序号 | r | d | n _E | v _E |
|----|--------|------|----------------|----------------|----|-------|------|----------------|----------------|
| 1 | 100.2 | 13.4 | 1.605 | 60.4 | 7 | 35.65 | 10.3 | 1.625 | 56.6 |
| 2 | 4070.0 | 4.26 | | | 8 | -57.7 | 2.71 | 1.702 | 38.3 |
| 3 | 196.2 | 4.57 | 1.792 | 25.9 | 9 | 201.5 | 21.8 | | |
| 4 | 498.5 | 1.3 | | | 10 | -72.2 | 1.55 | 1.813 | 25.2 |
| 5 | 112.0 | 13.7 | 1.625 | 56.6 | 11 | 64.7 | | | |
| 6 | 3190 | 80.5 | | | | | | | |

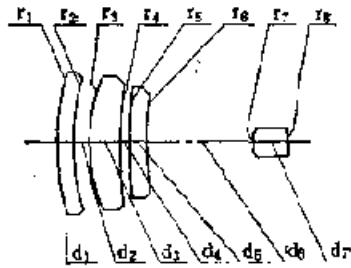
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.015 | -0.00026 | -0.011 | 0.0095 | -0.11 | 10.53 | -1.97% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_3 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.0030 | -0.20 | -0.13 | 0.013 | -0.14 | 0.077 | 0.037 |
| 70 | -0.024 | -0.071 | 0.071 | 0.000029 | -0.071 | 0.015 | 0.0005 |



编号: 01-00-077

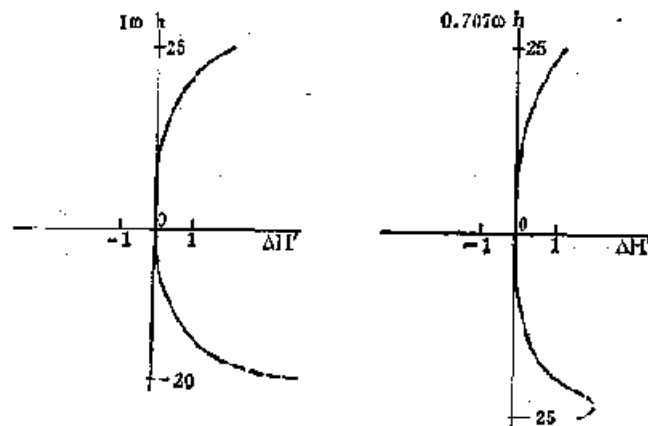
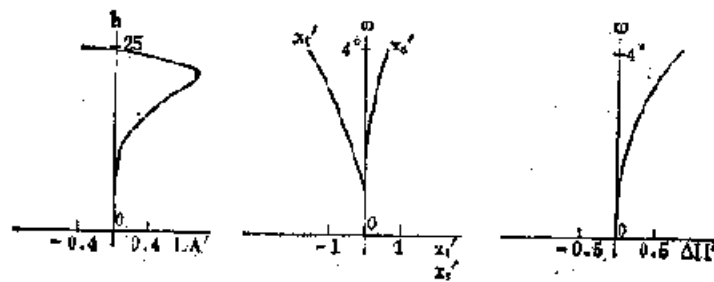
红 外 望 远 物 镜

E. F. L = 100 B. F. L = 1.48 FNo. = 2 F. A. = 8' $\lambda = 30000 \sim 80000 \text{ \AA}$



| 序号 | r | d | $n_{4.26\mu\text{m}}$ | | 序号 | r | d | $n_{4.26\mu\text{m}}$ | |
|----|-------|------|-----------------------|---|----|--------|------|-----------------------|---|
| 1 | 56.4 | 4.6 | 3.42 | 硅 | 5 | 193.7 | 4.9 | 4.02 | 硅 |
| 2 | 81.72 | 5.0 | | | 6 | 70.0 | 30.0 | | |
| 3 | 41.60 | 8.6 | 3.42 | 硅 | 7 | -7.92 | 9.3 | 4.32 | 硅 |
| 4 | 118.6 | 2.05 | | | 8 | -26.66 | | | |

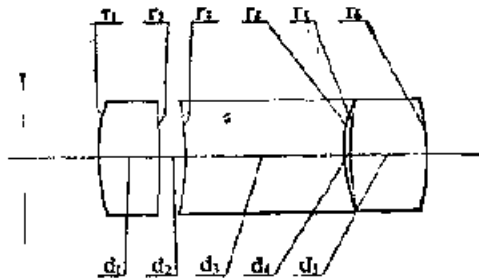
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1 ω) |
|-----------------------|--------------|--------------|--------------|--------------|---------------|-----------|------------------|
| | -0.011 | 0.16 | -0.12 | 0.19 | 0.32 | 7.44 | 11.26% |
| ω 或 $\omega\%$ | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.46 | 0.83 | -1.55 | 0.49 | -2.05 | -16.82 | 1.12 |
| 70 | 0.41 | 0.26 | -0.79 | 0.27 | -1.07 | -15.00 | 0.50 |



编号: 01-00-078

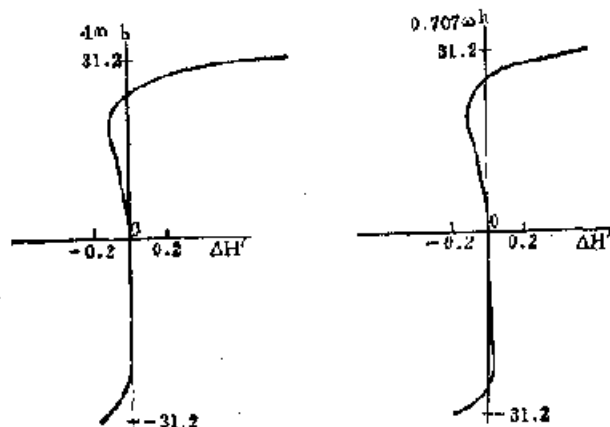
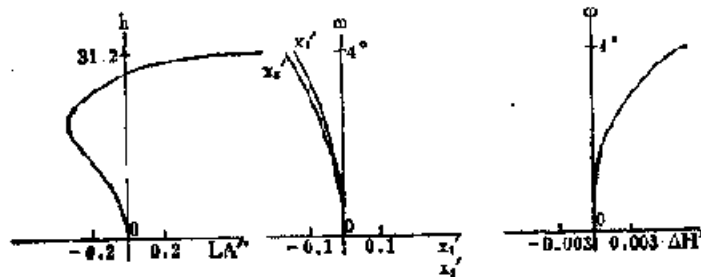
三片式物镜

E. F. L = 100 B. F. L = 52.12 FNo. = 1.6 F. A. = 8° $Lp'_1 = -14.3$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|--------|-------|-------|-------|----|-------|------|-------|-------|
| | | 14.3* | | | | | | | |
| 1 | 72.9 | 18.6 | 1.75 | 50.6 | 4 | 48.4 | 1.89 | | |
| 2 | -189.9 | 7.43 | | | 5 | 75.0 | 22.9 | 1.75 | 50.6 |
| 3 | -90.3 | 48.6 | 1.72 | 29.3 | 6 | -75.0 | | | |

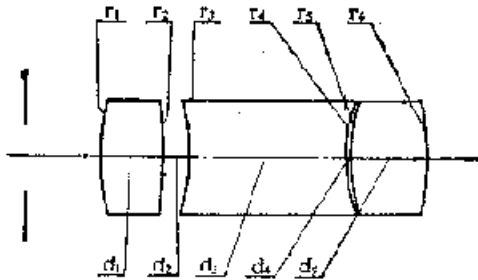
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-------------|
| | -0.27 | -0.057 | 0.00061 | -0.029 | 0.0045 | 7.06 | 0.11% |
| h 或 ω % | LA' | $\Delta H'$ | x_1 | x_2 | $x'_1 - x'_2$ | K_{T1} | $K'_{T0.7}$ |
| 100 | 0.78 | 0.0078 | -0.12 | -0.14 | 0.021 | 0.35 | -0.049 |
| 70 | -0.12 | 0.0026 | -0.068 | -0.075 | 0.0068 | 0.19 | -0.045 |



编号: 01-00-079

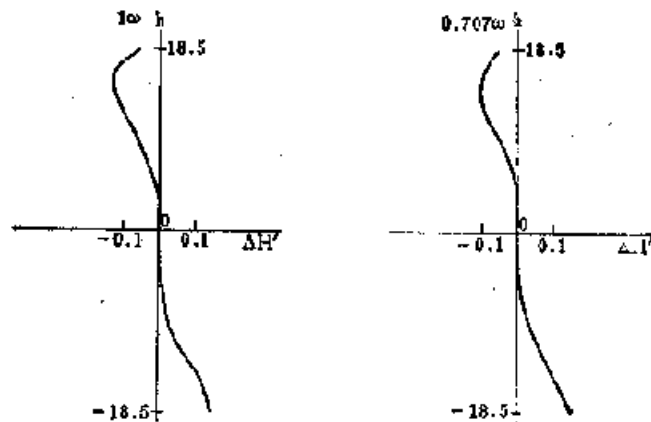
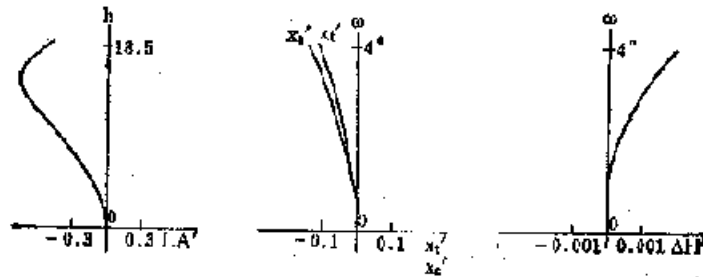
三片式物镜

E.F.L=100 B.F.L=70.28 FNo.=2.7 F.A.=8' $Lp_1'=-14.3$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|-------|-------|-------|-------|----|-------|------|-------|-------|
| 1 | 52.0 | 14.3* | | | 4 | 47.6 | 2.9 | | |
| 2 | -83.7 | 1.3 | 1.61 | 58.6 | 5 | 135 | 11.5 | 1.61 | 58.6 |
| 3 | -63.4 | 21.0 | 1.61 | 37.0 | 6 | -69.7 | | | |

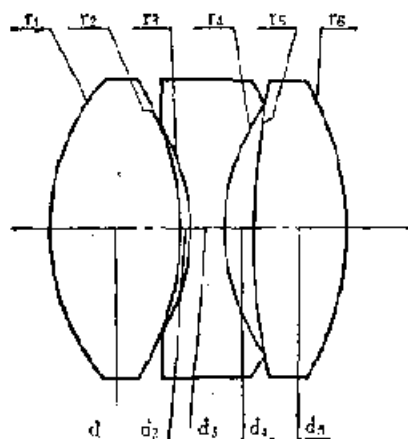
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|--------------|-----------|-----------------|
| | -0.12 | -0.0060 | 0.00053 | -0.010 | 0.00082 | 7.91 | 0.026% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 x'_2$ | K'_{r1} | $K'_{r0.7}$ |
| 100 | -0.52 | 0.0018 | -0.11 | -0.14 | 0.020 | 0.045 | -0.0078 |
| 70 | -0.05 | 0.00082 | -0.060 | -0.070 | 0.0095 | 0.030 | -0.0082 |



编号: 01-00-080

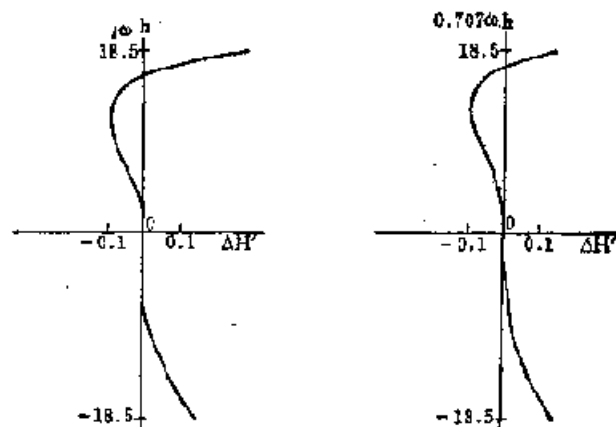
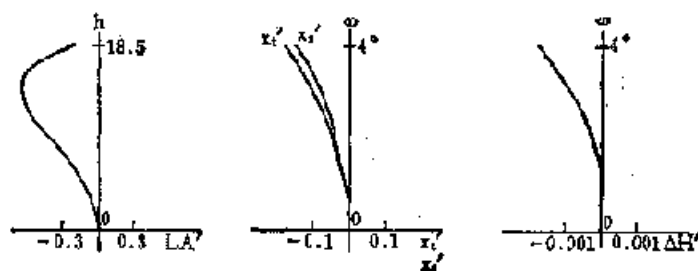
三片式物镜

E. F. L = 100 B. F. L = 65.83 FNo. = 2.7 F. A. = 6° $Lp_1' = -31.2$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|-------|-------|-------|-------|----|-------|------|-------|-------|
| | | 31.2* | | | | | | | |
| 1 | 50.4 | 28.6 | 1.61 | 58.8 | 4 | 46.6 | 6.84 | | |
| 2 | -59.0 | 1.61 | | | 5 | 143 | 20.2 | 1.61 | 58.8 |
| 3 | -43.6 | 7.61 | 1.62 | 36.6 | 6 | -65.4 | | | |

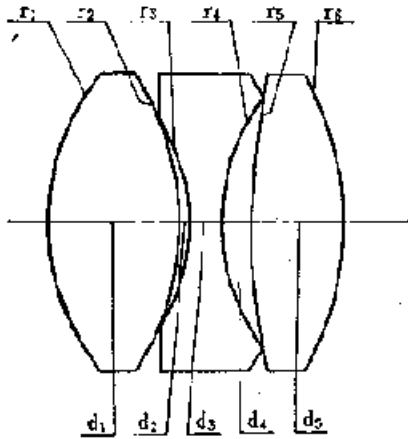
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|------------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.12 | -0.016 | -0.00081 | -0.0099 | -0.00074 | 7.07 | -0.025% |
| h 或 ω % | LA' | $\Delta H'$ | x_t' | x_s' | $x_t' - x_s'$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.23 | -0.0018 | 0.17 | -0.15 | -0.017 | 0.21 | -0.0070 |
| 70 | -0.60 | -0.00368 | -0.090 | -0.079 | -0.010 | 0.13 | -0.0082 |



编号: 01-00-081

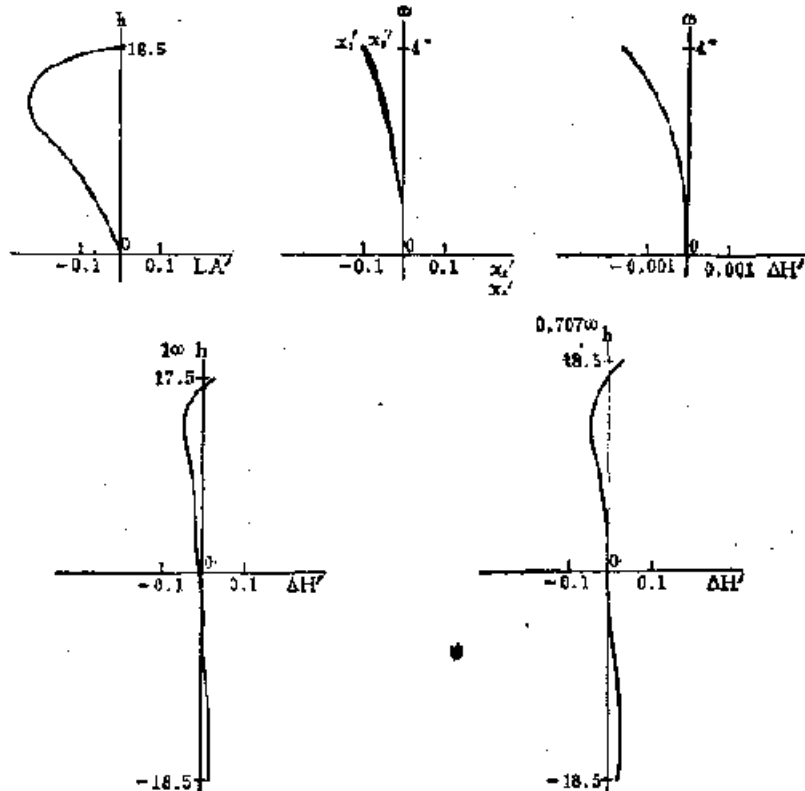
三片式物镜

E. F. L=100 B. F. L=69.14 FNo. =2.7 F. A. =8° $Lp'_1 = -14.5$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|-------|------|-------|-------|----|-------|------|-------|-------|
| 1 | 54.7 | 28.9 | 1.75 | 52.4 | 4 | 46.3 | 11.1 | | |
| 2 | -313 | 5.0 | | | 5 | 140 | 12.6 | 1.75 | 52.4 |
| 3 | -69.3 | 5.0 | 1.72 | 29.3 | 6 | -82.0 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.051 | -0.0092 | -0.00026 | -0.0058 | -0.00062 | 7.07 | -0.023% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.0090 | -0.0015 | -0.10 | -0.10 | -0.0018 | 0.046 | -0.012 |
| 70 | -0.22 | -0.00058 | -0.054 | -0.052 | -0.0024 | 0.028 | -0.010 |



编号: 01-00-082

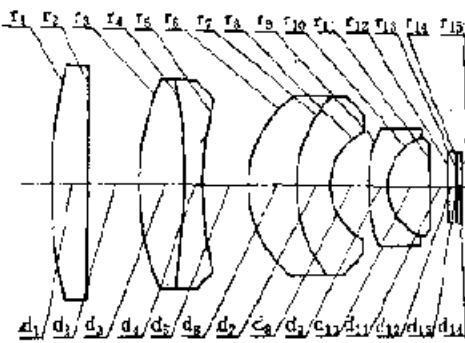
改进的三组元透镜系统

E. F. L = 1 英寸

B. F. L = 0

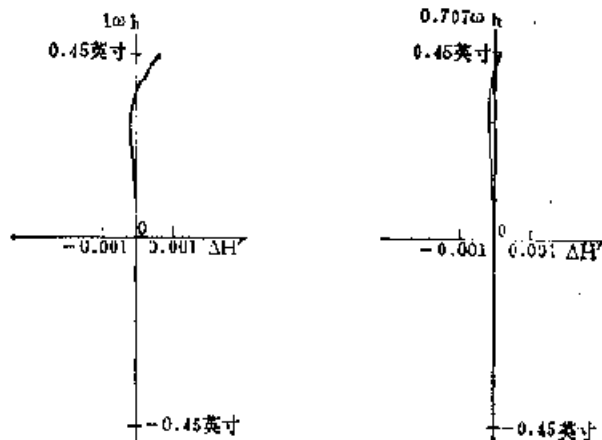
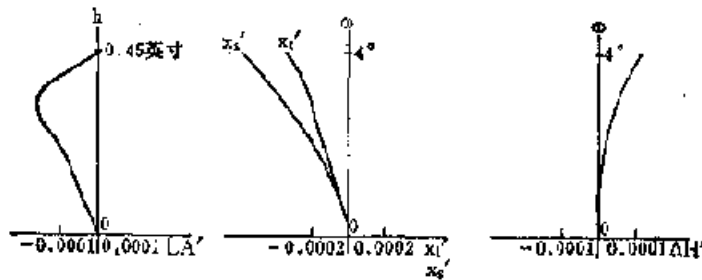
FNo. = 1.1

F. A. = 8°



| 序号 | r | d | n _E | v _E | 序号 | r | d | n _E | v _E |
|----|--------|-------|----------------|----------------|----|--------|---------|----------------|----------------|
| 1 | 2.08 | 0.142 | 1.721 | 47.7 | 9 | 0.621 | 0.032 | 1.592 | 52.9 |
| 2 | 23.6 | 0.21 | | | 10 | 0.2031 | 0.170 | 1.792 | 50.2 |
| 3 | 0.987 | 0.182 | 1.721 | 47.7 | 11 | 11.82 | 0.0758 | | |
| 4 | -2.035 | 0.078 | 1.813 | 25.3 | 12 | ∞ | 0.028 | 1.5163 | |
| 5 | 1.771 | 0.178 | | | 13 | ∞ | 0.03536 | | |
| 6 | 0.435 | 0.194 | 1.694 | 54.6 | 14 | ∞ | 0.015 | 1.5163 | |
| 7 | 0.641 | 0.142 | 1.768 | 28.8 | 15 | ∞ | | | |
| 8 | 0.228 | 0.150 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1 m) |
|-----------------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.00026 | -0.00013 | 0.00025 | 0.00030 | 0.00012 | 0.069 | 0.15% |
| Δ 或 ω % | LA' | $\Delta H'$ | x_1 | x_2 | $x_1' - x_2'$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.0000074 | 0.00011 | -0.00034 | -0.00058 | 0.00023 | 0.00029 | -0.000036 |
| 70 | -0.00017 | 0.000044 | -0.00012 | -0.00032 | 0.000091 | 0.000092 | -0.000064 |



编号: 01-00-083

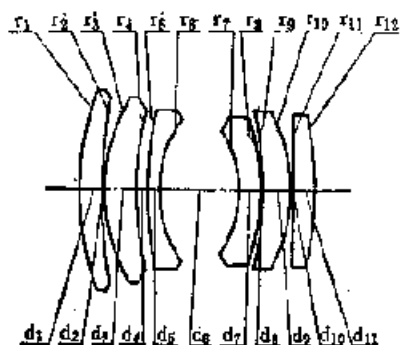
六片式大口径长工作截距摄影物镜

E. F. L = 100

B. F. L = 74.84

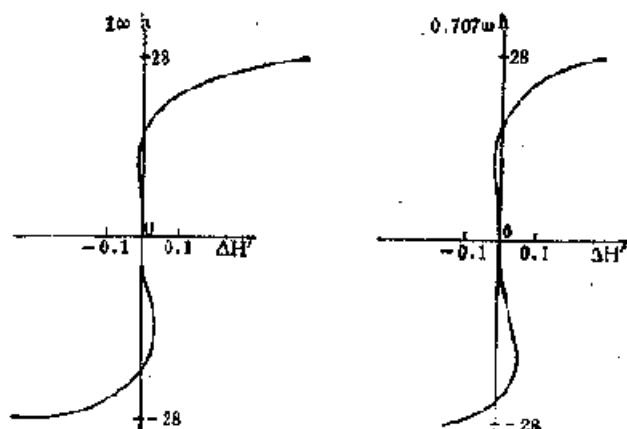
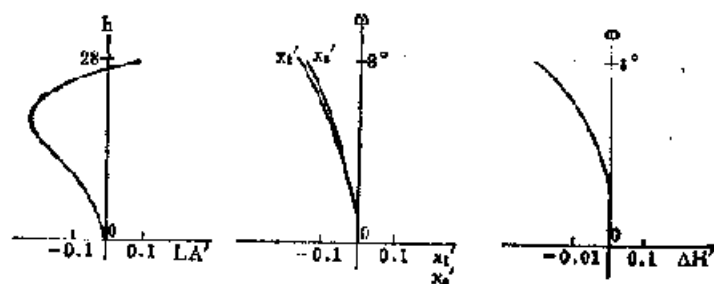
FNo. = 1.8

F. A. = 16'



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|-------|--------|------|----|----------|------|--------|------|
| 1 | 71.750 | 7.0 | 1.8377 | 42.0 | 7 | -31.500 | 6.10 | 1.7613 | 26.5 |
| 2 | 191.724 | 0.20 | | | 8 | -70.335 | 0.20 | | |
| 3 | 48.800 | 9.00 | 1.8372 | 43.3 | 9 | -109.300 | 8.00 | 1.8042 | 46.6 |
| 4 | 192.065 | 3.00 | | | 10 | -44.537 | 0.10 | | |
| 5 | 135.000 | 3.00 | 1.7408 | 27.7 | 11 | 670.000 | 6.50 | 1.7130 | 53.9 |
| 6 | 31.162 | 22.00 | | | 12 | -93.563 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------------|
| | -0.13 | 0.011 | -0.00073 | -0.026 | -0.010 | 14.95 | -0.14% |
| b 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{Tc.7}$ |
| 100 | 0.080 | -0.020 | -0.16 | -0.15 | -0.0048 | 0.059 | 0.030 |
| 70 | 0.21 | -0.0069 | -0.087 | -0.083 | -0.0034 | 0.053 | 0.024 |



编号: 01-00-084

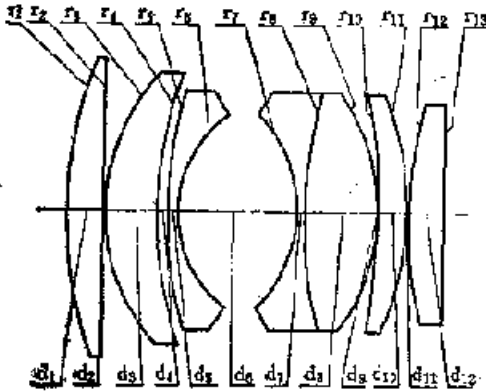
大孔径七片式物镜

E. F. L = 100

B. F. L = 63.48

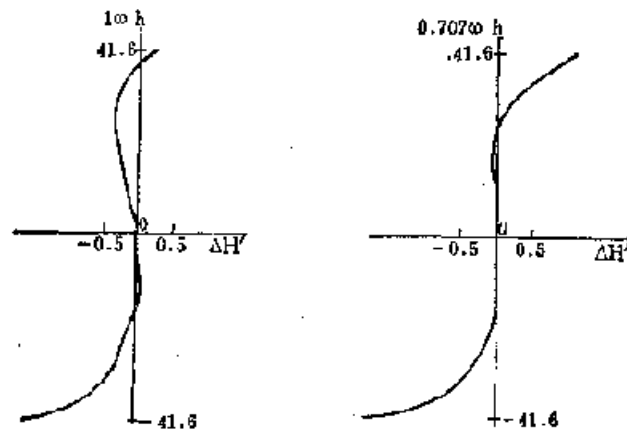
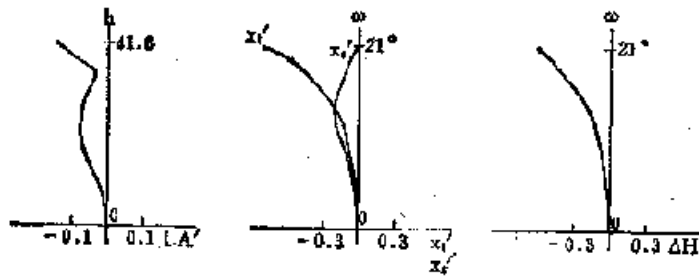
FNo. = 1.2

F. A. = 42°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|---------|-------|---------|-------|----|----------|-------|---------|-------|
| 1 | 110.000 | 10.00 | 1.80416 | 46.6 | 8 | 131.500 | 20.00 | 1.77252 | 49.6 |
| 2 | 586.748 | 0.20 | | | 9 | -56.806 | 0.20 | | |
| 3 | 51.600 | 14.50 | 1.79446 | 45.2 | 10 | -160.000 | 8.50 | 1.77252 | 49.6 |
| 4 | 100.426 | 3.50 | | | 11 | -74.352 | 0.20 | | |
| 5 | 119.000 | 3.00 | 1.71736 | 29.6 | 12 | 122.000 | 9.50 | 1.77252 | 49.6 |
| 6 | 32.792 | 32.50 | | | 13 | 2092.573 | | | |
| 7 | -36.500 | 2.00 | 1.68893 | 31.1 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HJ | QP (100) |
|----------------|--------------|--------------|--------------|--------------|---------------|------------------|--------------------|
| | -0.16 | -0.053 | 0.071 | -0.32 | -0.48 | 28.38 | -1.60% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | $K_{\uparrow 1}$ | $K_{\uparrow 0.7}$ |
| 100 | -0.14 | -0.81 | -0.81 | -0.00072 | -0.81 | -0.64 | -0.27 |
| 70 | -4.065 | -0.22 | -0.25 | -0.21 | -0.044 | 0.14 | -0.092 |



编号: 01-00-085

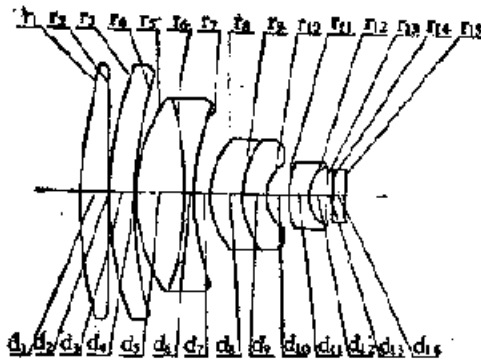
用于电视摄象机的大孔径物镜

E. F. L = 100

B. F. L = 6.1

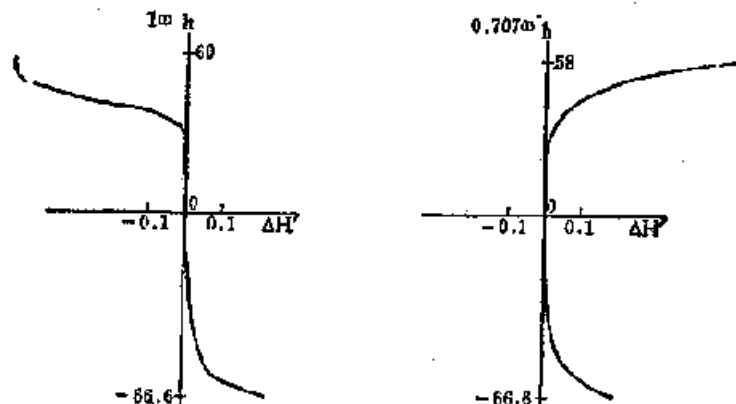
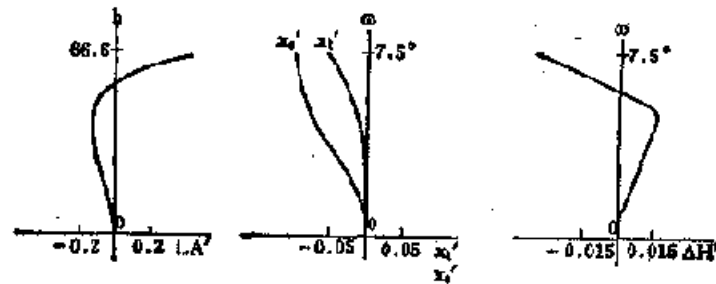
FNo. = 0.75

F. A. = 15°



| 序号 | r | d | n _D | v _D | 序号 | r | d | n _D | v _D |
|----|-------|-------|----------------|----------------|----|-------|-------|----------------|----------------|
| 1 | 280.1 | 16.35 | 1.694 | 54.5 | 9 | 51.65 | 14.5 | 1.768 | 26.7 |
| 2 | ∞ | 0.15 | | | 10 | 22.90 | 14.4 | | |
| 3 | 207.8 | 15.1 | 1.694 | 54.5 | 11 | 61.6 | 12.0 | 1.592 | 52.7 |
| 4 | 247 | 0.03 | | | 12 | 19.90 | 10.23 | 1.792 | 50.2 |
| 5 | 99.3 | 29.0 | 1.721 | 47.7 | 13 | 1547 | 2.5 | | |
| 6 | -208 | 7.8 | 1.813 | 25.2 | 14 | ∞ | 6.53 | 1.525 | 59.2 |
| 7 | 161 | 8.7 | | | 15 | ∞ | | | |
| 8 | 44.4 | 20.3 | 1.694 | 54.5 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|---------|--------------|--------------|----------------|----------------|---------------------------------|-----------------|-------------------|
| | -0.063 | -0.058 | 0.024 | -0.22 | 0.095 | 13.08 | -0.27% |
| h 或 ω % | LA' | ΔH' | x _t | x _s | x _t - x _s | K _{T1} | K _{T0.7} |
| 100 | 0.042 | -0.036 | -0.051 | -0.10 | 0.055 | 5.03 | -0.19 |
| 70 | -0.011 | 0.015 | -0.020 | -0.083 | 0.062 | 1.04 | 0.086 |

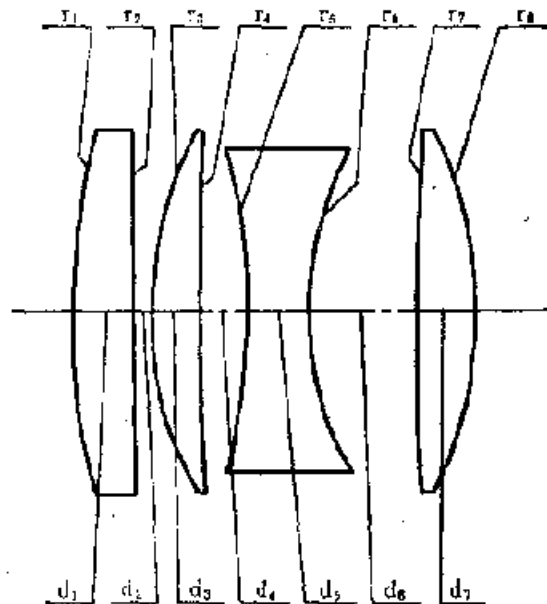


编号: 01-00-086

四片式大孔径记录透镜系统

E. F. L = 100 B. F. L = FNo. ≈ 1.9 F. A. $\approx 37.5^\circ \sim 43^\circ \sim 45^\circ$

$$\beta \approx \frac{7}{10} \sim \frac{9}{10} \sim 1.0^\circ$$

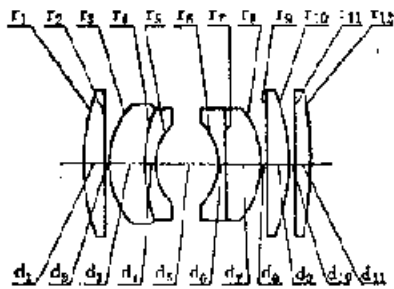


| 序号 | r | d | n_D | v_D |
|----|----------|-------|--------|-------|
| 1 | 99.39 | 9.05 | 1.6170 | 55.1 |
| 2 | 659.95 | 2.65 | | |
| 3 | 53.63 | 7.95 | 1.6110 | 67.2 |
| 4 | ∞ | 6.95 | | |
| 5 | -102.7 | 9.25 | 1.6725 | 32.2 |
| 6 | 49.7 | 16.17 | | |
| 7 | 310.1 | 8.60 | 1.6110 | 57.2 |
| 8 | 57.02 | | | |

编号: 01-00-087

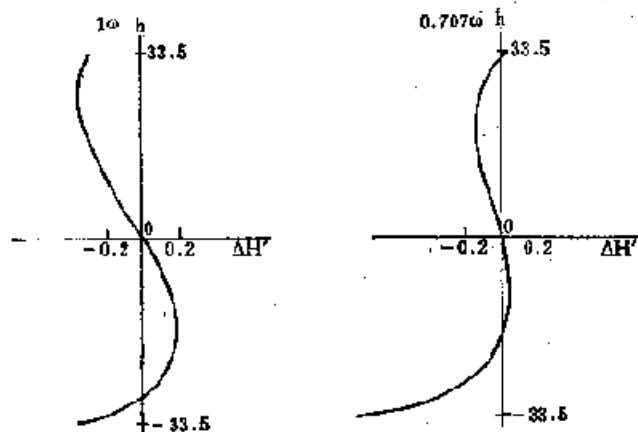
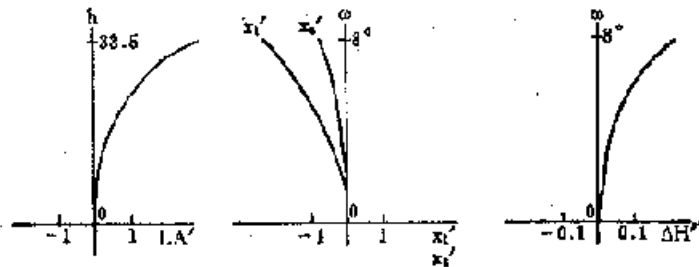
用于荧光影像的电子摄影复制的七片式镜头

E. F. L = 134.04 B. F. L = 51.80 FNo. = 2.0 F. A. = 16° $\lambda = 4360 \text{ \AA}$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|----------|-------|---------|-------|----|----------|-------|---------|-------|
| 1 | 33.0 | 12.15 | 1.62031 | 60.3 | 7 | ∞ | 19.8 | 1.62031 | 60.3 |
| 2 | ∞ | 3.0 | | | 8 | -48.5 | 3.0 | | |
| 3 | 46.5 | 19.8 | 1.62031 | 60.3 | 9 | ∞ | 12.15 | 1.62031 | 60.3 |
| 4 | 125.0 | 4.5 | 1.61992 | 36.3 | 10 | -93.0 | 3.0 | | |
| 5 | 30.686 | 34.0 | | | 11 | ∞ | 9.72 | 1.62031 | 60.3 |
| 6 | -30.686 | 4.5 | 1.61992 | 36.3 | 12 | -290.07 | | | |

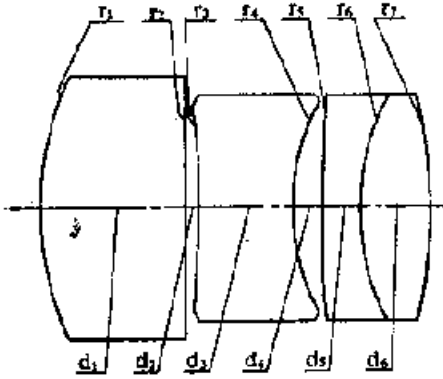
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP (1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | 0.14 | -0.048 | -0.067 | -0.023 | 0.10 | 18.95 | 1.14% |
| h 或 ω % | LA' | $\Delta H'$ | x'_e | x'_s | $x'_e - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | 2.91 | 0.21 | -2.20 | -0.79 | -1.41 | -0.31 | 0.10 |
| 70 | 0.93 | 0.073 | -1.01 | -0.38 | -0.63 | -0.36 | -0.11 |



编号, 01-00-088

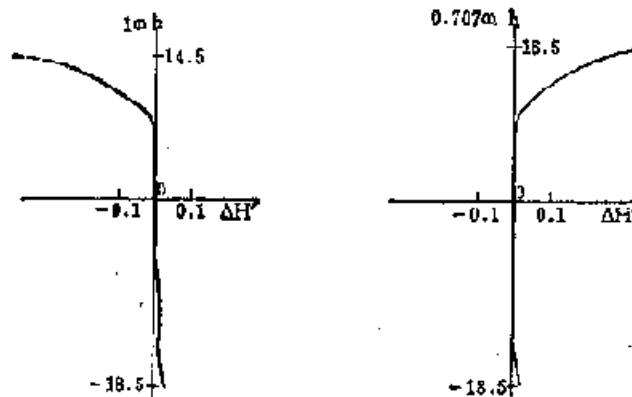
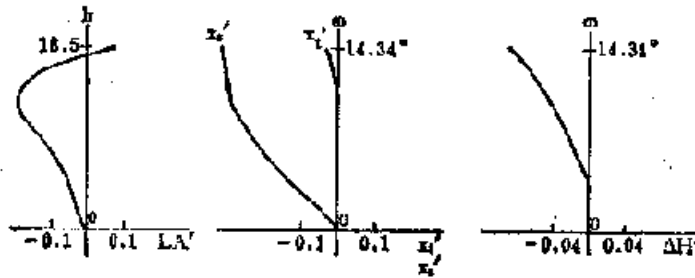
三组四片摄影物镜

E.F.L=100 B.F.L=69.47 FNo.=2.7 F.A.= $\pm 14.34'$ $Lp_1' = -17.4$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|--------|------|-------|-------|----|-------|------|-------|-------|
| 1 | 49.2 | 22.1 | 1.75 | 52.4 | 5 | 150.0 | 5.7 | 1.53 | 51.6 |
| 2 | 1017.5 | 2.2 | | | 6 | 34.8 | 10.8 | 1.75 | 52.4 |
| 3 | -121.1 | 14.6 | 1.69 | 51.1 | 7 | -32.0 | | | |
| 4 | 31.9 | 4.2 | | | | | | | |

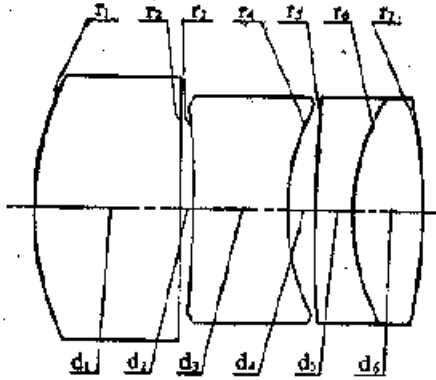
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | Hl | QP (mm) |
|------------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.047 | -0.020 | 0.011 | -0.066 | -0.019 | 26.34 | -0.33% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x_1' | x_2' | $x_3' - x_2'$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.060 | -0.083 | -0.035 | -0.33 | 0.30 | -1.84 | -0.093 |
| 70 | -0.18 | -0.020 | -0.0027 | -0.303 | 0.30 | 0.40 | 0.081 |



编号: 01-00-089

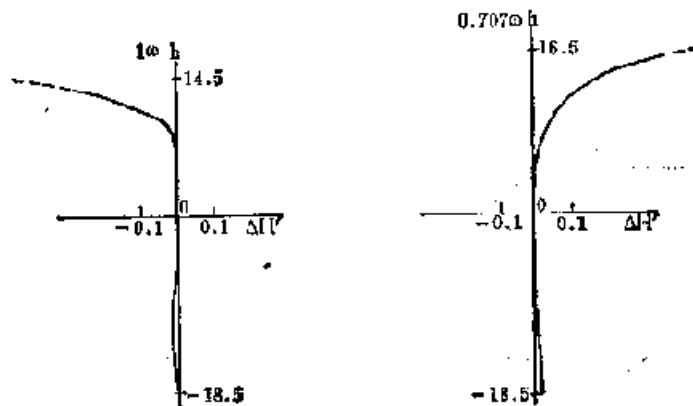
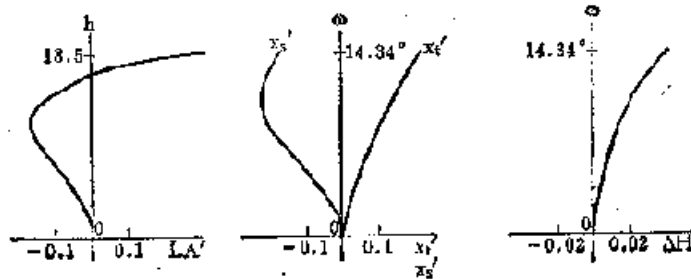
三组四片摄影物镜

E. F. L = 100 B. F. L = 69.71 FNo. = 2.7 F. A. = $\pm 14.34'$ $Lp_1' = -18.8$



| 序号 | r | d | nd | vd | 序号 | r | d | nd | vd |
|----|--------|-------|------|------|----|-------|------|------|------|
| | | 18.3* | | | | | | | |
| 1 | 50.3 | 22.0 | 1.75 | 50.6 | 5 | 434.8 | 5.7 | 1.53 | 51.6 |
| 2 | -284.2 | 1.7 | | | 6 | 84.6 | 10.9 | 1.75 | 50.6 |
| 3 | -93.2 | 14.7 | 1.69 | 30.9 | 7 | -74.1 | | | |
| 4 | 34.6 | 3.8 | | | | | | | |

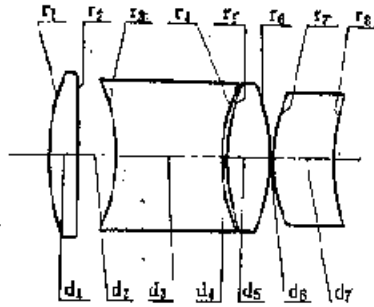
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | OP (1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-------|------------|
| | -0.050 | -0.015 | 0.015 | -0.060 | 0.014 | 28.40 | 0.15% |
| h 或 ω % | LA' | $\Delta H'$ | x_1 | x_2 | $x_1' - x_2'$ | K_T | $K_{T0.7}$ |
| 100 | 0.31 | 0.040 | 0.22 | -0.18 | 0.41 | -2.00 | -0.14 |
| 70 | -0.16 | 0.019 | 0.12 | -0.22 | 0.35 | 0.39 | 0.081 |



编号: 01-00-090

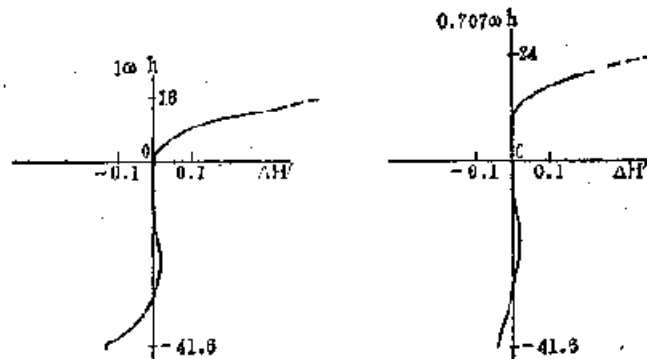
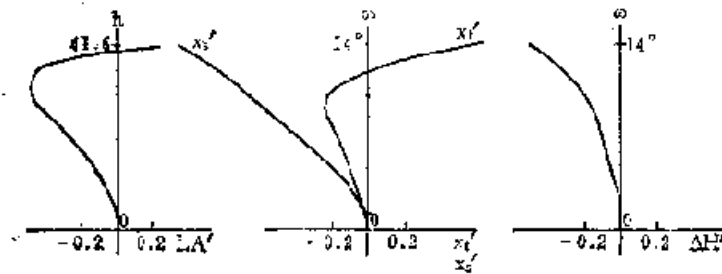
四组元大孔径镜头

E. F. L=100 B. F. L=53.97 FNo. =1.2 F. A. = $\pm 14^\circ$ $Lp'_1 = -14.29$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|--------|-------|------|----|---------|-------|--------|------|
| | | 14.29* | | | | | | | |
| 1 | 181.52 | 16.43 | 1.753 | 50.6 | 5 | 116.97 | 24.29 | 1.753 | 50.6 |
| 2 | -737.93 | 20.71 | | | 6 | -96.043 | 1.43 | | |
| 3 | -96.043 | 60.00 | 1.720 | 29.3 | 7 | 86.129 | 34.28 | 1.6968 | 56.2 |
| 4 | 94.329 | 2.02 | | | 8 | 154.39 | | | |

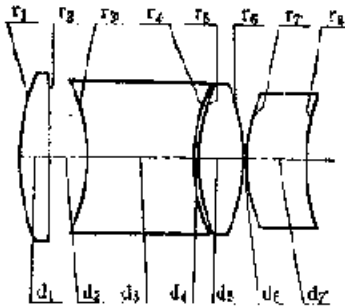
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | III | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.39 | -0.28 | 0.030 | -0.53 | -0.50 | 24.03 | -2.18% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.22 | -0.54 | 0.62 | -1.08 | 1.70 | 18.40 | 11.03 |
| 70 | -0.46 | -0.20 | -0.24 | -0.65 | 0.41 | 18.20 | 0.82 |



编号: 01-00-091

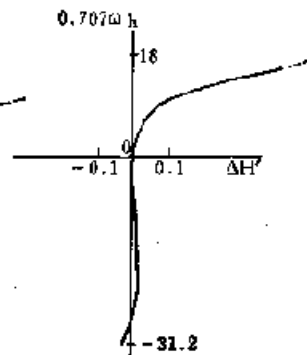
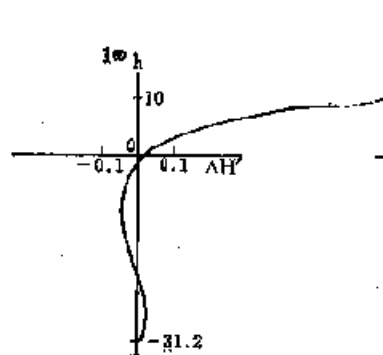
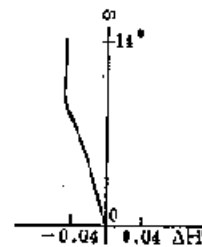
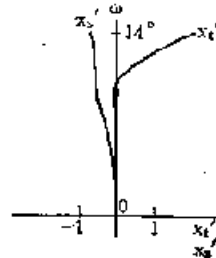
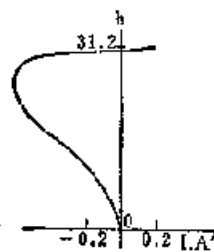
四组元大孔径镜头

E. F. L = 100 B. F. L = 53.37 FNo. = 1.6 F. A. = $\pm 14^\circ$ $Lp_1' = -14.28$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|--------|-------|------|----|---------|-------|-------|------|
| | | 14.29* | | | | | | | |
| 1 | 84.843 | 16.14 | 1.617 | 54.9 | 5 | 502.27 | 18.00 | 1.617 | 54.9 |
| 2 | -510.43 | 20.93 | | | 6 | -50.200 | 1.43 | | |
| 3 | 58.733 | 26.36 | 1.389 | 30.9 | 7 | 69.464 | 32.57 | 1.617 | 54.9 |
| 4 | 90.279 | 3.93 | | | 8 | 126.44 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.29 | -0.20 | -0.036 | -0.29 | -0.11 | 24.93 | -0.18% |
| h 或 ω % | LA' | $\Delta H'$ | x_1' | x_2' | $x_4' - x_3'$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.16 | -0.046 | 2.28 | -0.75 | 3.04 | 10.31 | 3.34 |
| 70 | -0.59 | -0.047 | 0.088 | -0.64 | 0.55 | 8.36 | 0.94 |



编号: 01-00-Q92

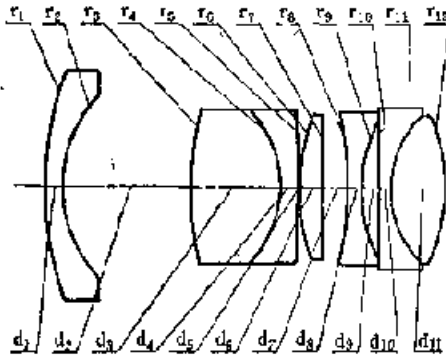
短焦距长后截距摄影镜头

E. F. L = 1.0

B. F. L = 1.0918

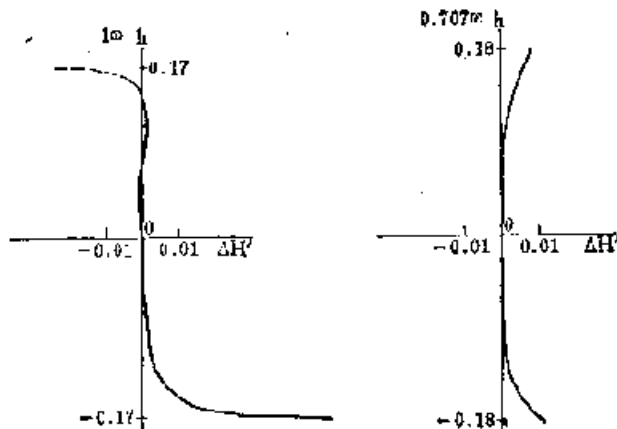
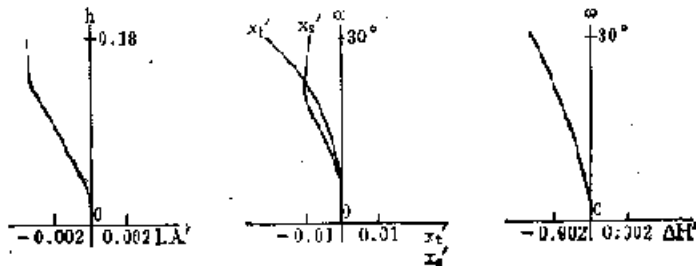
FNo. = 2.8

F. A. = 60°



| 序号 | r | d | n_g | v_g | 序号 | r | d | n_g | v_g |
|----|--------|-------|--------|-------|----|---------|-------|--------|-------|
| 1 | 1.115 | 0.064 | 1.4892 | 69.9 | 7 | -17.428 | 0.095 | | |
| 2 | 0.446 | 0.439 | | | 8 | -1.141 | 0.043 | 1.7040 | 34.0 |
| 3 | 1.489 | 0.303 | 1.6713 | 41.6 | 9 | 0.541 | 0.056 | | |
| 4 | -0.368 | 0.053 | 1.6299 | 38.8 | 10 | 11.455 | 0.043 | 1.6734 | 46.9 |
| 5 | -3.292 | 0.003 | | | 11 | 0.358 | 0.180 | 1.6040 | 64.6 |
| 6 | 0.674 | 0.085 | 1.6241 | 60.1 | 12 | -0.575 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.00049 | 0.00044 | 0.00025 | -0.0017 | -0.0021 | 0.57 | -0.50% |
| h 或 ω % | LA' | $\Delta H'$ | x_t | x'_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.0036 | -0.0034 | -0.020 | -0.0095 | -0.011 | -0.018 | 0.0022 |
| 70 | -0.0030 | -0.0019 | -0.0078 | -0.0098 | 0.0019 | 0.0098 | 0.00098 |



编号: 01-00-093

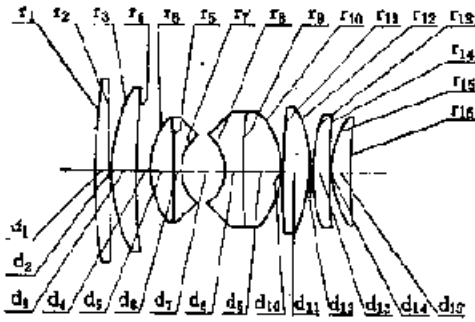
大孔径摄影或电影摄影物镜

E. F. L = 100

B. F. L = 68.42

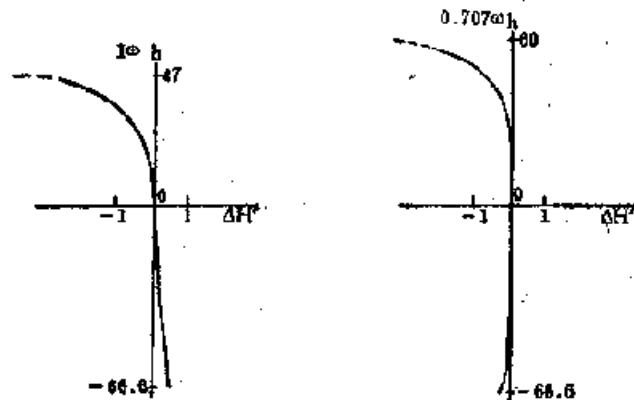
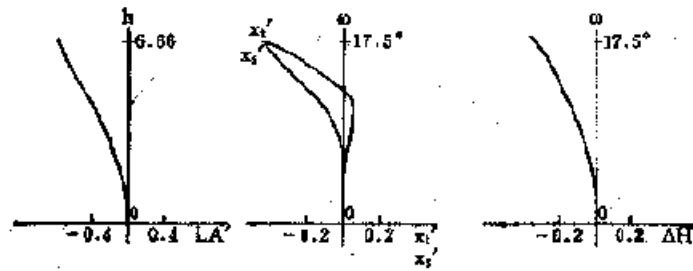
FNo. = 0.75

F. A. = 35°



| 序号 | r | d | n _d | v _d | 序号 | r | d | n _d | v _d |
|----|----------|-------|----------------|----------------|----|---------|-------|----------------|----------------|
| 1 | 696.68 | 10.51 | 1.51973 | 51.9 | 9 | 414.82 | 42.45 | 1.73592 | 50.8 |
| 2 | -2309.16 | 0.40 | | | 10 | -84.78 | 0.40 | | |
| 3 | 185.20 | 28.10 | 1.51973 | 51.9 | 11 | 613.55 | 30.85 | 1.82287 | 50.1 |
| 4 | 836.41 | 13.76 | | | 12 | -146.65 | 0.40 | | |
| 5 | 87.02 | 28.49 | 1.68584 | 47.9 | 13 | 156.47 | 20.63 | 1.58990 | 58.0 |
| 6 | -676.06 | 7.46 | 1.62076 | 52.3 | 14 | 854.49 | 0.40 | | |
| 7 | 46.14 | 50.90 | | | 15 | 99.01 | 22.60 | 1.58990 | 58.0 |
| 8 | -47.56 | 18.67 | 1.85504 | 23.5 | 16 | 302.96 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.68 | -0.030 | 0.30 | -0.58 | -0.88 | 31.47 | -1.14% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.79 | -0.36 | -0.44 | -0.45 | 0.013 | 22.42 | -1.24 |
| 70 | -0.43 | -0.19 | 0.052 | -0.17 | 0.22 | 51.92 | -0.29 |



编号: 01-00-094

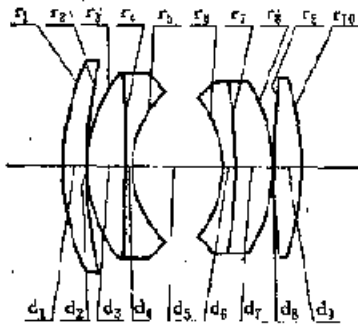
大孔径双高斯型摄影或电影摄影物镜

E. F. L = 100

B. F. L = 71.9

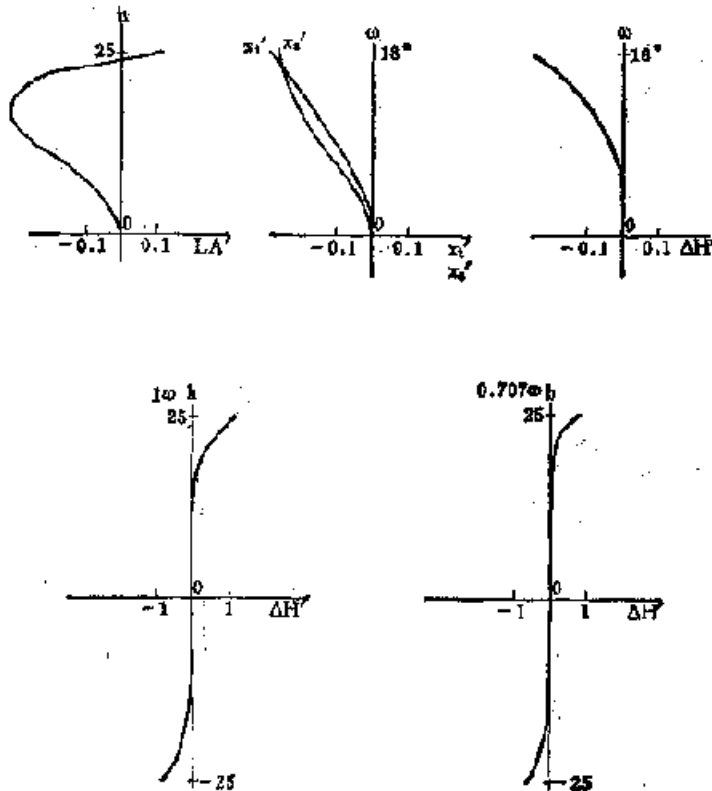
FNo. = 2

F. A. = 36°



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|--------|-------|---------|-------|----|---------|-------|---------|-------|
| 1 | 83.05 | 0.13 | 1.78668 | 43.62 | 6 | -30.88 | 3.83 | 1.61202 | 23.28 |
| 2 | 121.37 | 0.38 | | | 7 | -134.40 | 10.35 | 1.78668 | 43.62 |
| 3 | 37.88 | 10.73 | 1.68081 | 55.31 | 8 | -41.25 | 0.33 | | |
| 4 | 575.52 | 2.30 | 1.59810 | 39.58 | 9 | 854.04 | 7.28 | 1.78668 | 43.62 |
| 5 | 25.52 | 24.91 | | | 10 | -82.71 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HJ | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.146 | 0.0093 | 0.010 | -0.082 | 0.10 | 32.49 | 0.88% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{f1} | $K_{T0.7}$ |
| 100 | 0.11 | -0.26 | -0.26 | -0.36 | -0.026 | 0.11 | 0.046 |
| 70 | -0.31 | -0.084 | -0.17 | -0.21 | 0.043 | 0.10 | 0.039 |



编号: 01-00-095

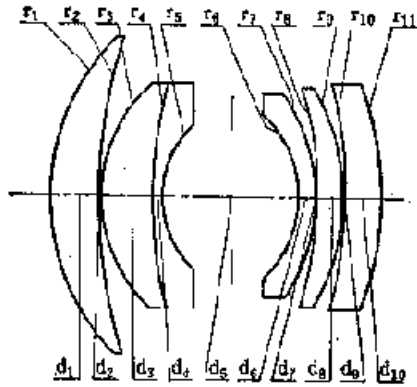
五组元光学物镜

E. F. L = 1.000

B. F. L = 0.5913

FN₀ = 2.8

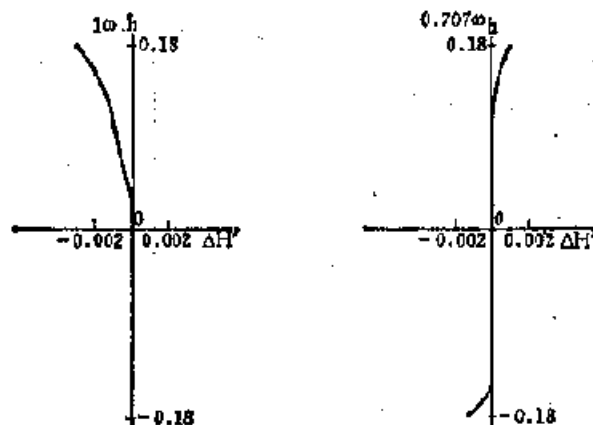
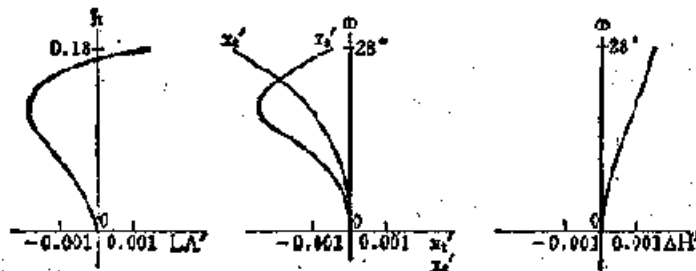
F. A. = 56°



| 序号 | 1/r | d | n _d | v _d | 序号 | 1/r | d | n _d | v _d |
|----|---------|---------|----------------|----------------|----|---------|--------|----------------|----------------|
| 1 | 2.4269 | 0.0900 | 1.6204 | 60.3 | 7 | -2.8784 | 0.0020 | | |
| 2 | 1.0077 | 0.0020 | | | 8 | -1.3964 | 0.0500 | 1.6204 | 60.3 |
| 3 | 3.5754 | 0.1000 | 1.6204 | 60.3 | 9 | -2.8544 | 0.0020 | | |
| 4 | 1.2056 | 0.0200 | 1.6254 | 35.6 | 10 | -1.2150 | 0.0700 | 1.8028 | 40.8 |
| 5 | 5.4002 | 0.2500* | | | 11 | -2.5585 | | | |
| 6 | -4.7922 | 0.0300 | 1.8032 | 25.4 | | | | | |

0.2500* = 0.1250 + 0.1250

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------------|-------------------|
| | -0.00053 | 0.00011 | 0.000078 | -0.00076 | 0.0012 | 0.53 | 0.27% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K _{T1} | K _{T0.7} |
| 100 | 0.0014 | 0.0014 | -0.0032 | -0.00050 | -0.0027 | -0.0012 | -0.00070 |
| 70 | -0.0018 | 0.00037 | -0.0013 | -0.0026 | 0.0012 | -0.00047 | -0.000017 |



编号: 01-00-096

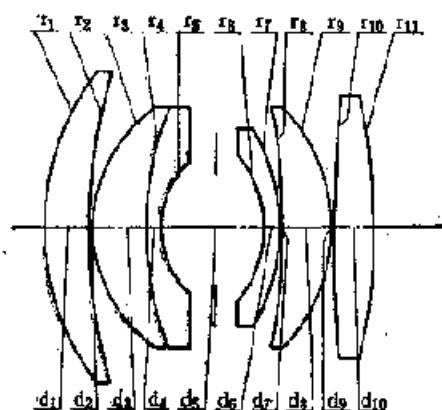
五组元光学物镜

E. F. L = 1.000

B. F. L = 0.4894

FNo. = 1.5

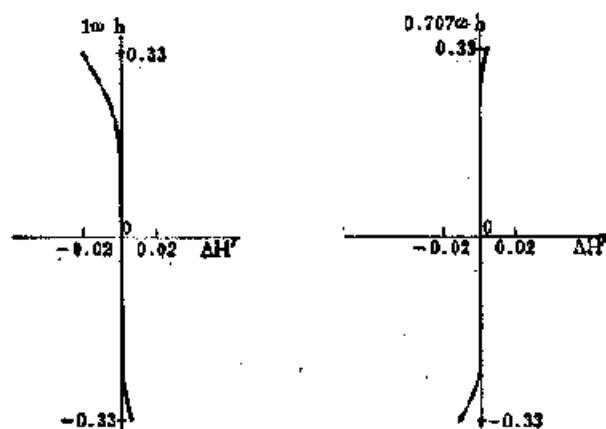
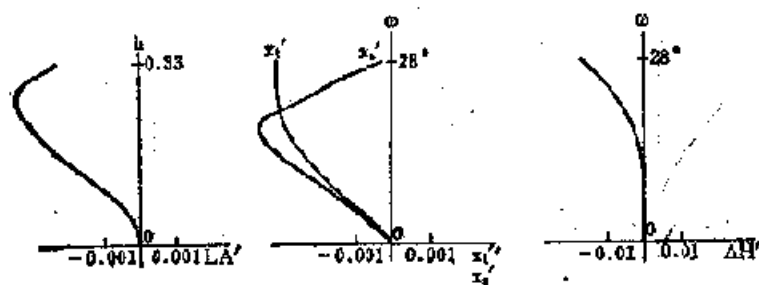
F. A. = 56°



| 序号 | 1/r | d | n_d | v_d | 序号 | 1/r | d | n_d | v_d |
|----|---------|---------|--------|-------|----|---------|--------|--------|-------|
| 1 | 1.4870 | 0.1300 | 1.8028 | 46.8 | 7 | -1.9489 | 0.0030 | | |
| 2 | 0.6046 | 0.0030 | | | 8 | -0.5537 | 0.1300 | 1.8028 | 46.8 |
| 3 | 2.5267 | 0.1500 | 1.8028 | 46.8 | 9 | -2.2409 | 0.0030 | | |
| 4 | 1.1372 | 0.0400 | 1.7847 | 25.8 | 10 | 0.2941 | 0.1100 | 1.8028 | 46.8 |
| 5 | 4.0977 | 0.2800* | | | 11 | -0.6141 | | | |
| 6 | -3.4392 | 0.0400 | 1.9176 | 21.5 | | | | | |

$$0.2800^* = 0.1400 + 0.1400$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.0025 | 0.00076 | -0.00027 | -0.0036 | -0.0035 | 0.53 | -3.31% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.0024 | -0.017 | -0.0033 | -0.00027 | -0.0031 | -0.0081 | -0.0036 |
| 70 | -0.0034 | -0.0046 | -0.0032 | -0.0036 | 0.00034 | -0.0038 | 0.00025 |



编号: 01-00-097

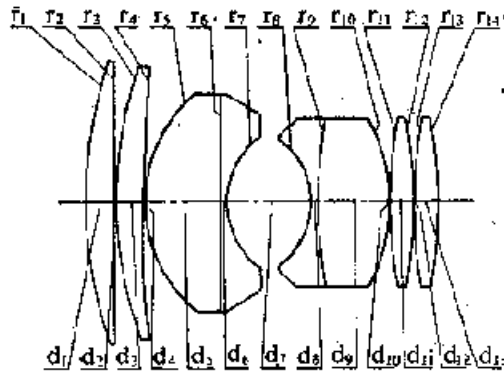
双高斯型物镜

E. F. L = 1

B. F. L = 0.8726

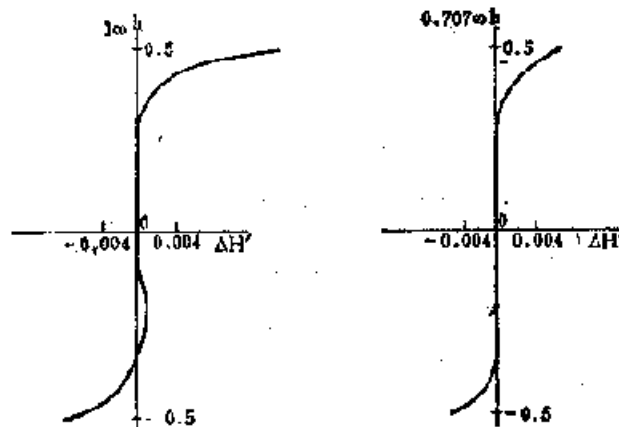
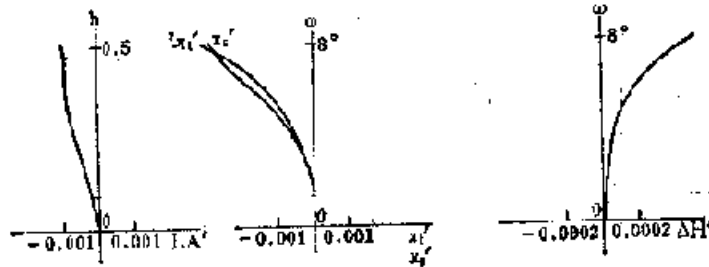
FNo. = 1.0

F. A. = 16°



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|---------|--------|--------|-------|----|---------|--------|--------|-------|
| 1 | 1.4859 | 0.1002 | 1.6730 | 47.19 | 8 | -0.3968 | 0.0261 | 1.3989 | 30.05 |
| 2 | 5.0270 | 0.0044 | | | 9 | 1.6898 | 0.2439 | 1.7131 | 53.89 |
| 3 | 1.2175 | 0.1045 | 1.6730 | 47.19 | 10 | -0.6325 | 0.0044 | | |
| 4 | 3.8055 | 0.0044 | | | 11 | 1.7111 | 0.0784 | 1.6910 | 54.89 |
| 5 | 0.4783 | 0.2570 | 1.7139 | 53.89 | 12 | -1.7111 | 0.0044 | | |
| 6 | -12.489 | 0.0261 | 1.6989 | 30.05 | 13 | 1.7111 | 0.0784 | 1.6910 | 54.89 |
| 7 | 0.2696 | 0.2788 | | | 14 | -1.7111 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(10°) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | 0.0018 | -0.000051 | 0.00015 | -0.0016 | 0.00045 | 0.14 | 0.36% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_2 - x'_1$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.00099 | 0.00051 | -0.0031 | -0.0029 | -0.00014 | 0.0026 | 0.00013 |
| 70 | -0.00097 | 0.00018 | -0.0013 | -0.0014 | 0.00013 | 0.0013 | 0.00014 |



编号: 01-00-098

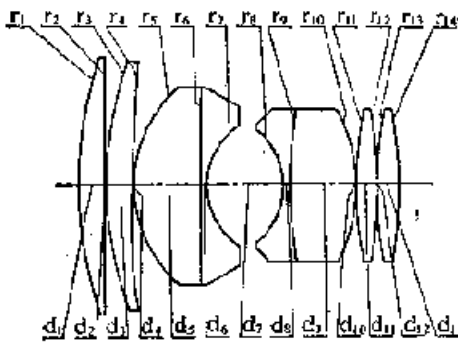
双高斯型物镜

E. F. L = 1

B. F. L = 0.3838

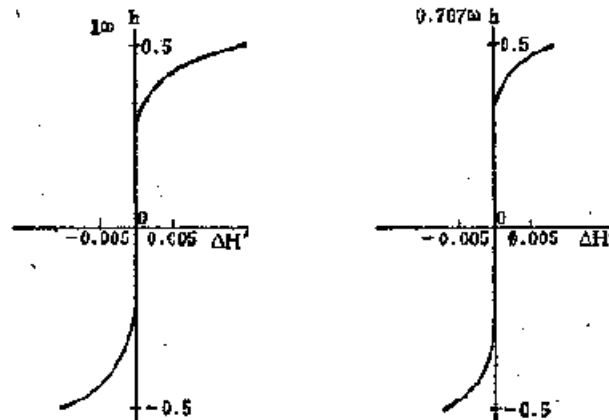
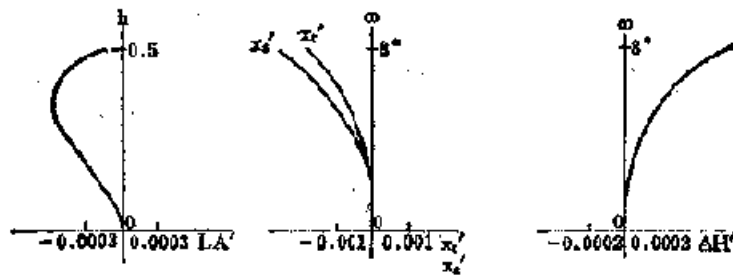
FNo. = 1.0

F. A. = 16°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|--------|--------|-------|----|---------|--------|--------|-------|
| 1 | 1.5252 | 0.1023 | 1.6700 | 47.19 | 8 | -0.3800 | 0.0252 | 1.6989 | 30.05 |
| 2 | 5.1743 | 0.0016 | | | 9 | 1.7635 | 0.2594 | 1.6204 | 60.29 |
| 3 | 1.2023 | 0.1067 | 1.6700 | 47.19 | 10 | -0.5199 | 0.0016 | | |
| 4 | 3.9145 | 0.0016 | | | 11 | 1.4108 | 0.0788 | 1.6910 | 54.80 |
| 5 | 0.4876 | 0.2572 | 1.7170 | 47.90 | 12 | -2.2930 | 0.0016 | | |
| 6 | -10.376 | 0.0274 | 1.6989 | 30.05 | 13 | 1.4108 | 0.0788 | 1.6910 | 54.80 |
| 7 | 0.2756 | 0.2851 | | | 14 | -2.2930 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.0011 | -0.00044 | 0.00038 | -0.0016 | 0.00058 | 0.14 | 0.44% |
| h 或 ω % | LA' | $\Delta H'$ | x_t | x_s | $x'_t - x'_s$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.00015 | 0.00062 | -0.0018 | -0.0025 | 0.00067 | 0.0027 | -0.00010 |
| 70 | -0.00057 | 0.00021 | -0.00071 | -0.0012 | 0.00056 | 0.0010 | -0.00011 |



编号: 01-00-099

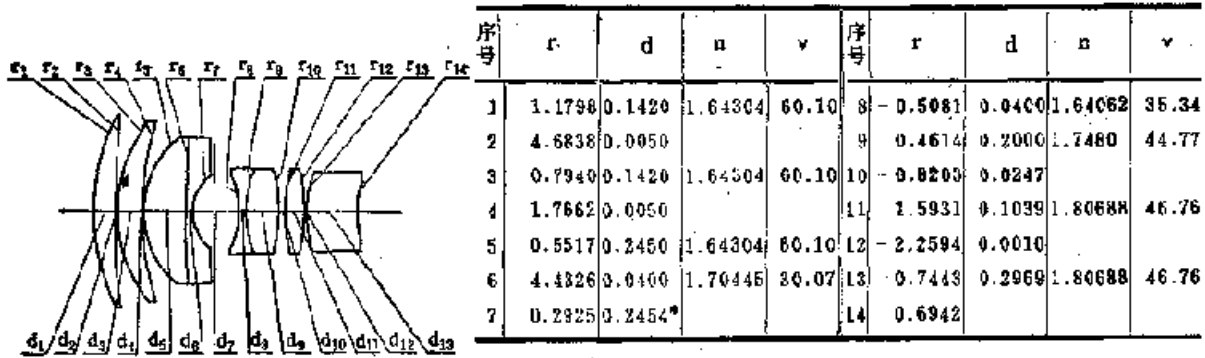
改进的双高斯型物镜

E. F. L = 1.000

B. F. L = 0.1000

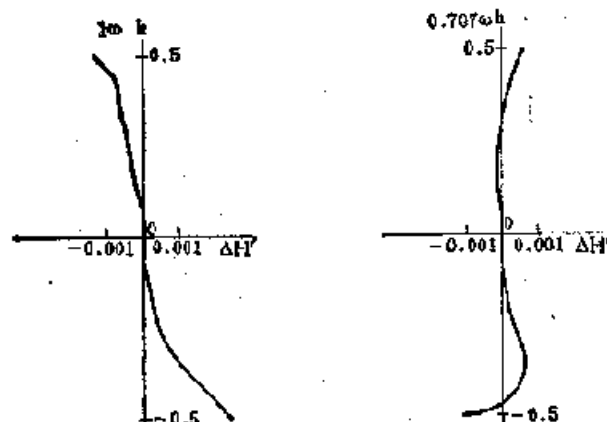
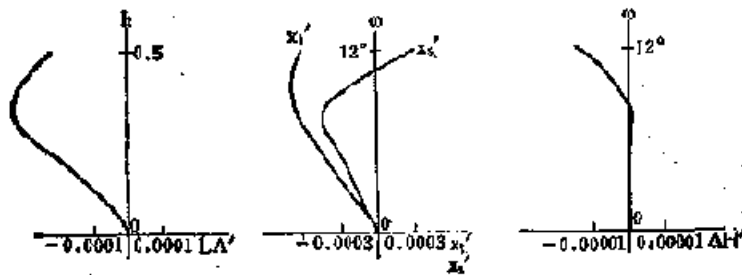
FN₀ = 1.0

F. A. = 24°



0.2454* = 0.1064 + 0.1390

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(10) |
|----------------|--------------|--------------|--------------|--------------|--------------|-----------|-------------|
| | -0.00072 | 0.00026 | -0.000055 | 0.00096 | 0.00010 | 0.21 | -0.0071% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.00021 | -0.000015 | -0.00065 | 0.00031 | -0.00097 | 0.00051 | 0.00025 |
| 70 | -0.00032 | 0.0000066 | -0.00069 | -0.00045 | -0.00024 | -0.00020 | 0.00031 |



编号: 01-00-100

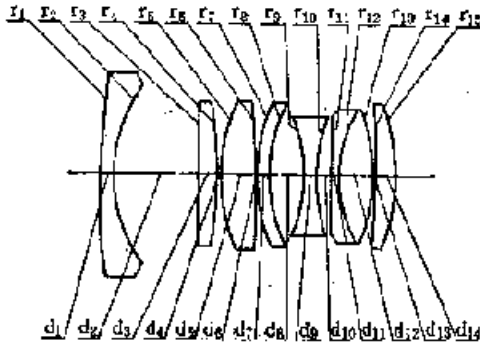
广 角 镜 头

E. F. L = 100

B. F. L = 103.96

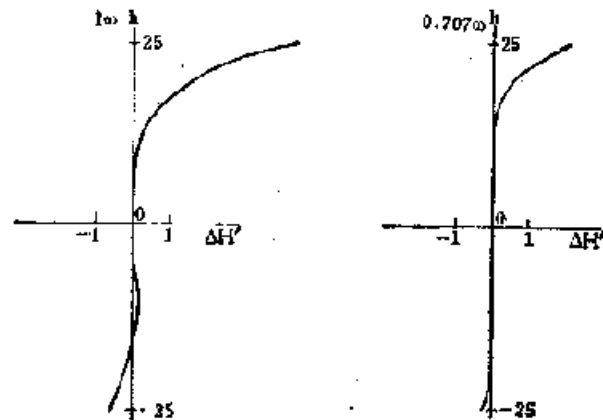
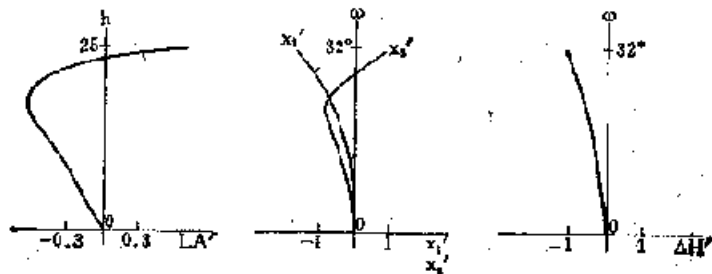
FNo. = 2.0

F. A. = $\pm 32^\circ$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|-----------|-------|---------|-------|----|----------|-------|---------|-------|
| 1 | 450.000 | 7.00 | 1.58913 | 61.2 | 9 | -91.500 | 6.50 | 1.74077 | 27.1 |
| 2 | 80.137 | 47.00 | | | 10 | 98.025 | 8.00 | | |
| 3 | -2500.000 | 10.00 | 1.76200 | 40.3 | 11 | 1000.000 | 4.00 | 1.83400 | 37.2 |
| 4 | -292.234 | 2.00 | | | 12 | 71.000 | 19.00 | 1.77252 | 49.6 |
| 5 | 95.700 | 18.00 | 1.77252 | 49.6 | 13 | -89.354 | 0.50 | | |
| 6 | -707.468 | 1.00 | | | 14 | -600.000 | 10.00 | 1.77251 | 49.6 |
| 7 | 80.000 | 8.00 | 1.53172 | 48.9 | 15 | -110.648 | | | |
| 8 | 84.488 | 18.00 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|------------|
| | -0.27 | -0.067 | 0.046 | -0.38 | -0.81 | 92.48 | -1.78% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x'_2 | x'_3 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.67 | -1.11 | -1.65 | 0.90 | -2.56 | 2.90 | 0.48 |
| 70 | -0.64 | -0.58 | -0.76 | -0.80 | 0.035 | 0.95 | 0.10 |



编号: 01-00-101

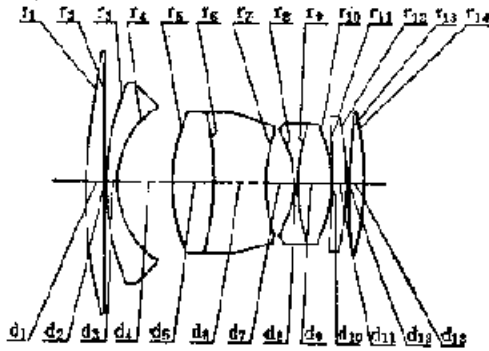
大孔径长工作截距摄影镜头

E. F. L = 1.0

B. F. L = 1.1337

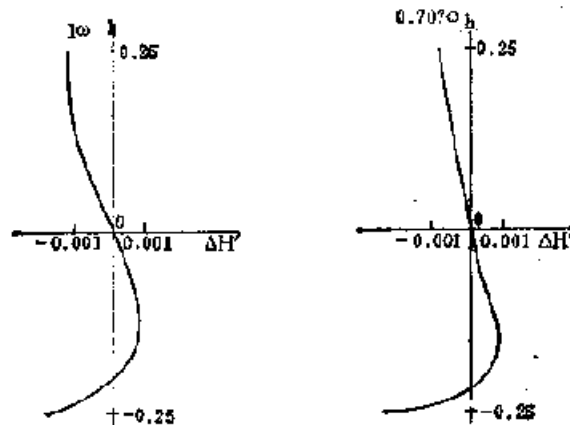
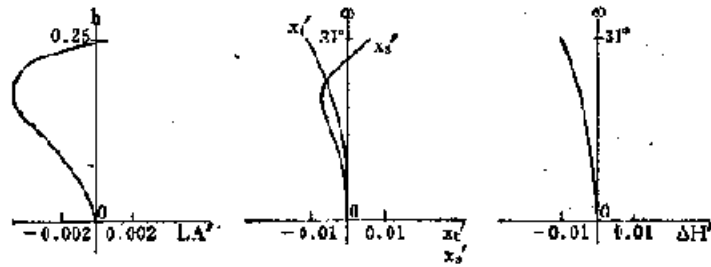
FNo. = 2

F. A. = 62°



| 序号 | r | d | n _D | v _d | 序号 | r | d | n _D | v _d |
|----|---------|---------|----------------|----------------|----|---------|---------|----------------|----------------|
| 1 | 3.2117 | 0.10833 | 1.71300 | 53.9 | 8 | -0.5992 | 0.02778 | 1.78470 | 26.1 |
| 2 | ∞ | 0.00278 | | | 9 | 1.0775 | 0.19444 | 1.74445 | 49.4 |
| 3 | 1.3889 | 0.06111 | 1.51680 | 64.2 | 10 | -0.7172 | 0.00278 | | |
| 4 | 0.4778 | 0.31111 | | | 11 | -3.0556 | 0.08333 | 1.75684 | 46.2 |
| 5 | 0.8945 | 0.23778 | 1.60755 | 41.9 | 12 | -1.0691 | 0.00278 | | |
| 6 | -1.5278 | 0.29167 | 1.51454 | 54.62 | 13 | 3.6111 | 0.08944 | 1.74400 | 44.9 |
| 7 | 0.9444 | 0.14722 | | | 14 | -2.1958 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|---------|--------------|--------------|--------------|--------------|--------------|-----------------|-------------------|
| | -0.0019 | 0.0010 | 0.00034 | -0.0035 | 0.0071 | 0.60 | -1.73% |
| h 或 ω % | LA' | ΔH' | x'_t | x'_s | x'_t - x'_s | K _{T1} | K _{T0.7} |
| 100 | 0.00058 | -0.011 | -0.011 | 0.0048 | -0.015 | -0.0016 | -0.00032 |
| 70 | -0.0045 | -0.0055 | -0.0042 | -0.0071 | 0.0029 | -0.0017 | 0.00017 |



编号: 01-00-102

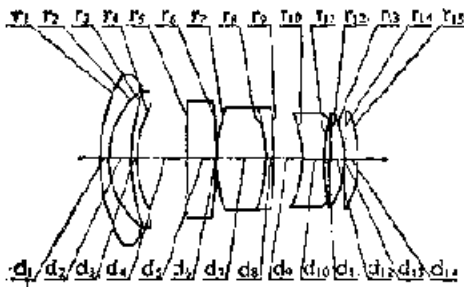
反远距型广角物镜

E. F. L = 100

B. F. L = 181.4

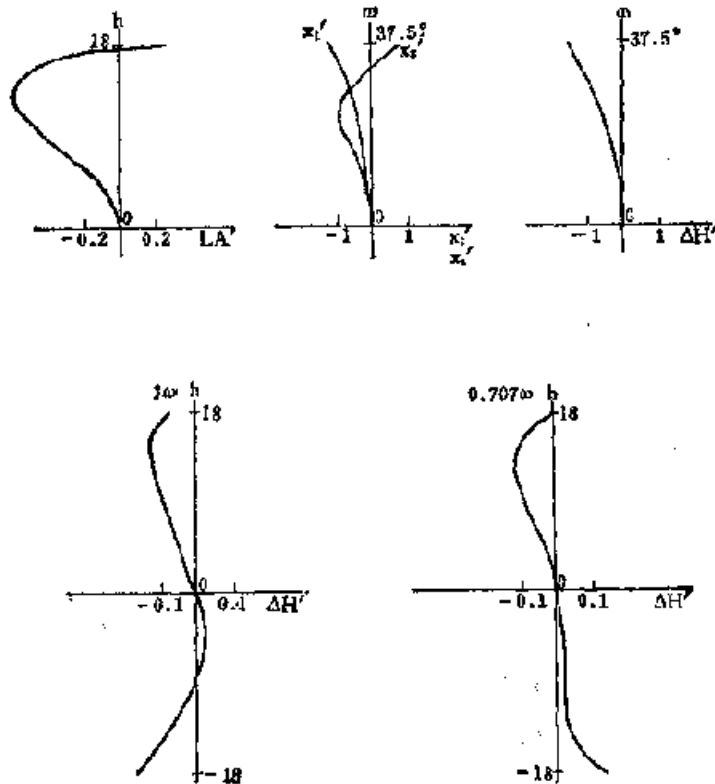
FNo. = 2.8

F. A. = 75°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|-------|---------|------|----|--------|-------|---------|------|
| 1 | 100.52 | 5.59 | 1.64250 | 58.1 | 9 | 301.4 | 17.86 | | |
| 2 | 54.0 | 13.29 | | | 10 | 64.0 | 14.0 | 1.75520 | 27.5 |
| 3 | 129.85 | 3.85 | 1.62041 | 60.3 | 11 | 176.57 | 3.5 | | |
| 4 | 70.25 | 31.47 | | | 12 | 300.0 | 7.7 | 1.69680 | 55.6 |
| 5 | 398.4 | 17.48 | 1.60342 | 37.8 | 13 | 61.1 | 0.35 | | |
| 6 | -625.0 | 0.35 | | | 14 | 1668.5 | 6.29 | 1.63854 | 55.5 |
| 7 | 97.17 | 30.0 | 1.71700 | 47.9 | 15 | 100.8 | | | |
| 8 | -80.42 | 4.55 | 1.50137 | 56.5 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|---------------|
| | -0.13 | -0.0049 | 0.020 | -0.17 | -0.65 | 76.63 | -1.95% |
| b 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{T_1} | $K_{T_{0.7}}$ |
| 100 | 0.27 | -1.49 | -1.15 | 0.62 | -1.77 | -0.11 | -0.092 |
| 70 | -0.61 | -0.73 | -0.63 | -0.81 | 0.17 | 0.062 | -0.045 |



编号: 01-00-103

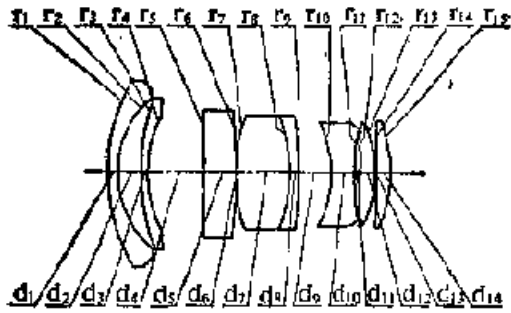
反远距型广角物镜

E. F. L = 100

B. F. L = 130.5

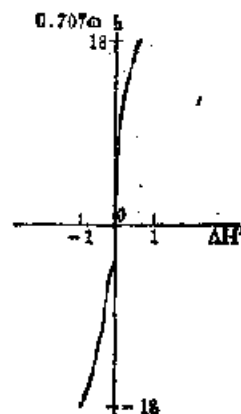
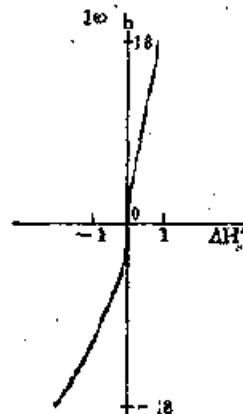
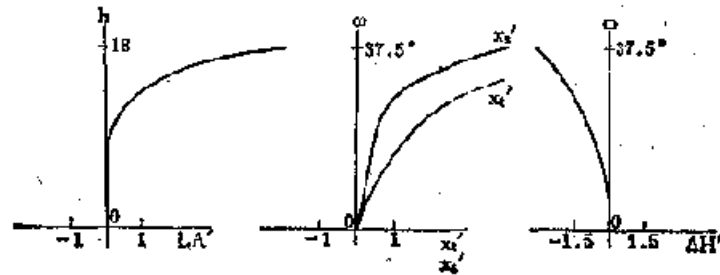
FNo. = 2.8

F. A. = 75°



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|--------|-------|---------|------|----|---------|-------|---------|------|
| 1 | 103.15 | 5.89 | 1.65160 | 58.5 | 9 | -302.45 | 17.58 | | |
| 2 | 54.72 | 13.29 | | | 10 | -63.20 | 14.0 | 1.72825 | 28.3 |
| 3 | 129.37 | 3.85 | 1.62230 | 53.1 | 11 | 176.6 | 3.5 | | |
| 4 | 60.73 | 31.47 | | | 12 | -234.26 | 7.0 | 1.71300 | 53.0 |
| 5 | 979.0 | 17.48 | 1.67270 | 32.3 | 13 | -82.94 | 0.35 | | |
| 6 | -700.0 | 0.35 | | | 14 | -1073.4 | 6.29 | 1.65160 | 58.5 |
| 7 | 97.2 | 31.12 | 1.72000 | 50.3 | 15 | -93.7 | | | |
| 8 | -80.4 | 4.55 | 1.50137 | 56.5 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(10) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.017 | -0.028 | 0.062 | -0.041 | -0.87 | 78.32 | -3.86% |
| h 或 ω % | LA' | AH' | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 4.94 | -3.03 | 8.70 | 4.30 | 4.40 | -0.48 | -0.27 |
| 70 | 0.73 | -1.11 | 2.53 | 0.90 | 1.63 | -0.093 | -0.12 |



编号: 01-00-104

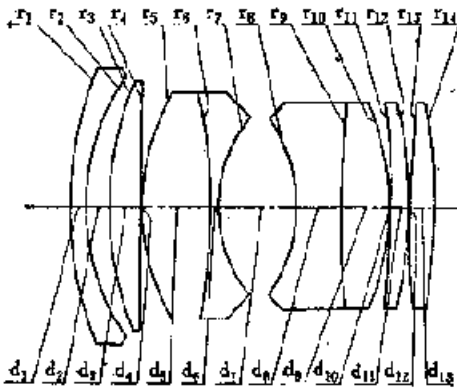
大孔径摄影或电影摄影物镜

E. F. L=1

B. F. L=0.7264

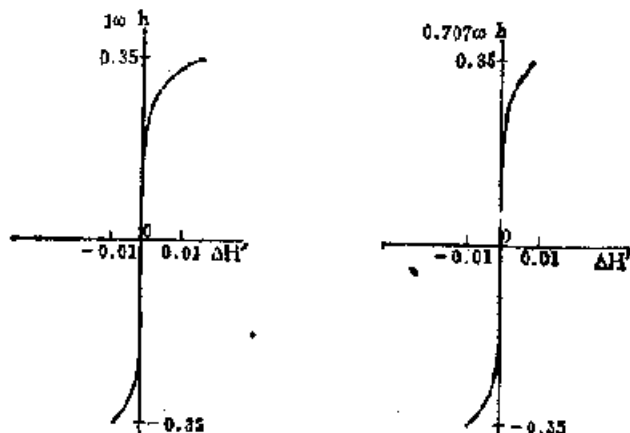
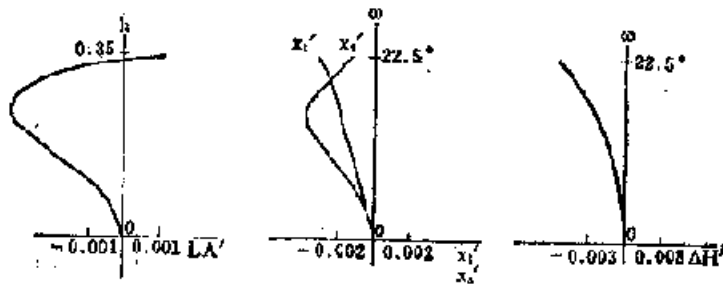
FN₀ = 1.4

F. A. = 45°



| 序号 | r | d | n _D | v _d | 序号 | r | d | n _D | v _d |
|----|---------|--------|----------------|----------------|----|---------|--------|----------------|----------------|
| 1 | 0.9812 | 0.0479 | 1.56732 | 42.8 | 8 | -0.4496 | 0.1245 | 1.85518 | 25.4 |
| 2 | 0.6237 | 0.0671 | | | 9 | 2.4070 | 0.1342 | 1.73143 | 43.9 |
| 3 | 0.9057 | 0.0882 | 1.78443 | 43.9 | 10 | -0.7077 | 0.0019 | | |
| 4 | 5.4044 | 0.0019 | | | 11 | -3.2532 | 0.0575 | 1.73143 | 43.9 |
| 5 | 0.5551 | 0.1916 | 1.78179 | 37.1 | 12 | -1.1153 | 0.0019 | | |
| 6 | -1.5370 | 0.0237 | 1.68893 | 31.2 | 13 | 3.5820 | 0.0671 | 1.73143 | 43.9 |
| 7 | 0.3789 | 0.2108 | | | 14 | -1.6338 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.0028 | 0.00043 | 0.00069 | -0.0037 | -0.0040 | 0.41 | -1.34% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.0010 | -0.0057 | -0.0032 | -0.0013 | -0.0019 | 0.0038 | 0.00083 |
| 70 | -0.0032 | -0.0022 | -0.0021 | -0.0039 | 0.0018 | -0.00029 | 0.00038 |



编号: 01-00-105

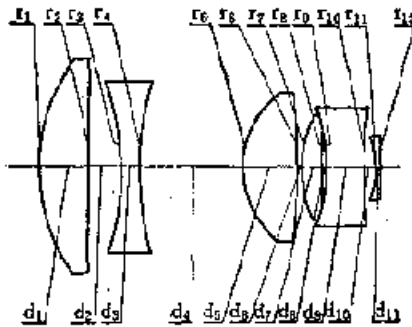
六片式珀兹伐型放映镜头

E. F. L = 100

B. F. L = 12.86

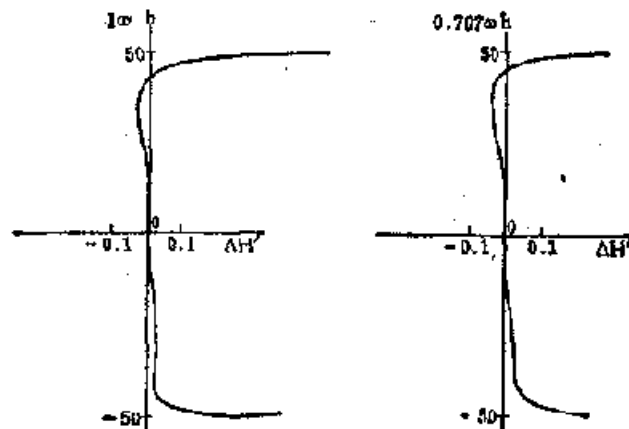
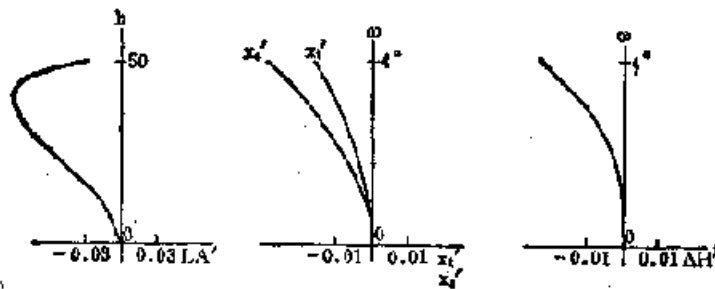
FNo. = 1.0

F. A. = 8°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|--------|------|-------|-------|----|----------|------|-------|-------|
| 1 | 107.3 | 27.6 | 1.713 | 53.9 | 7 | 63.48 | 10.7 | 1.713 | 53.9 |
| 2 | -870.3 | 17.1 | | | 8 | -2845 | 1.99 | | |
| 3 | -154.3 | 11.4 | 1.728 | 28.3 | 9 | -151.9 | 22.5 | 1.755 | 27.5 |
| 4 | 232.0 | 56.8 | | | 10 | 321.0 | 4.95 | | |
| 5 | 51.24 | 30.0 | 1.516 | 64.0 | 11 | -59.70 | 3.16 | 1.755 | 27.5 |
| 6 | -325.1 | 2.27 | | | 12 | ∞ | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.16 | 0.0033 | 0.0034 | -0.018 | -0.021 | 7.00 | -0.31% |
| h 或 ω % | LA' | $\Delta H'$ | x'_4 | x'_5 | $x'_1 - x'_4$ | K_{T1} | $K_{T0.7}$ |
| 100 | -0.033 | -0.022 | -0.016 | -0.029 | 0.013 | 0.43 | -0.013 |
| 70 | -0.086 | -0.0078 | -0.0083 | -0.015 | 0.0068 | 0.25 | -0.011 |



编号, 01-00-106

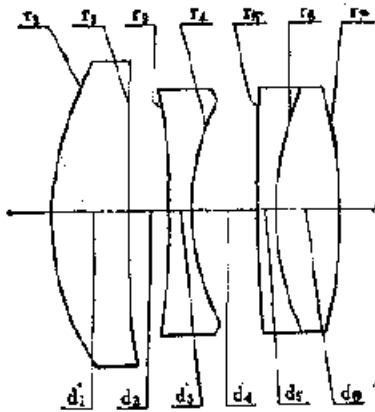
三组四片摄影物镜

E. F. L = 100

B. F. L = 79.77

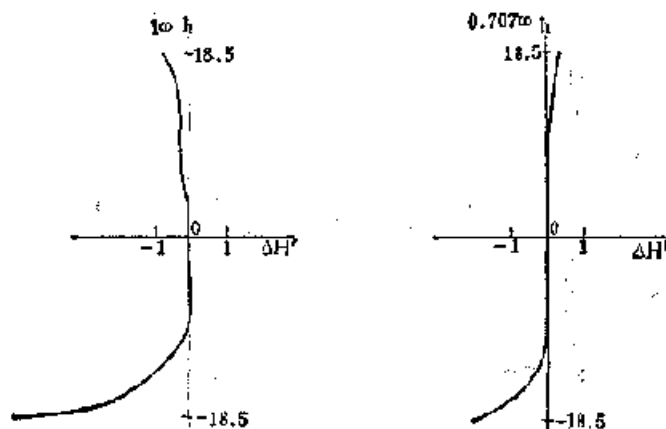
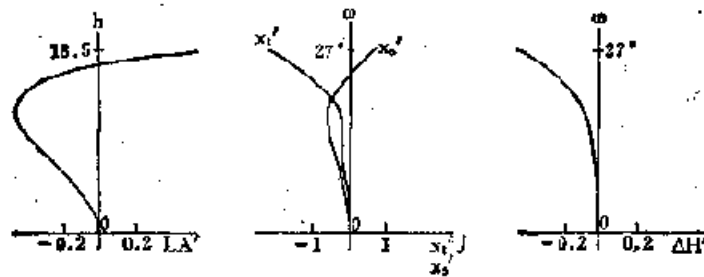
FNo. = 2.7

F. A. = $\pm 27^\circ$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|-------|------|------|------|----|-------|-----|------|------|
| 1 | 39.0 | 10.7 | 1.73 | 51.0 | 5 | 432.7 | 2.9 | 1.62 | 36.6 |
| 2 | 494.6 | 5.8 | | | 6 | 42.9 | 8.7 | 1.74 | 44.9 |
| 3 | -98.6 | 3.4 | 1.67 | 32.2 | 7 | -63.4 | | | |
| 4 | 34.5 | 8.9 | | | | | | | |

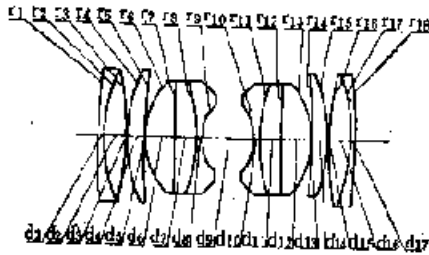
| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QF(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.12 | 0.055 | 0.032 | -0.20 | -0.012 | 52.01 | -0.91% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K_{0.7}$ |
| 100 | 0.54 | -0.47 | -2.10 | 0.60 | -2.71 | -2.63 | -0.47 |
| 70 | -0.47 | -0.091 | -0.27 | -0.65 | 0.37 | -0.87 | -0.071 |



编号: 01-00-107

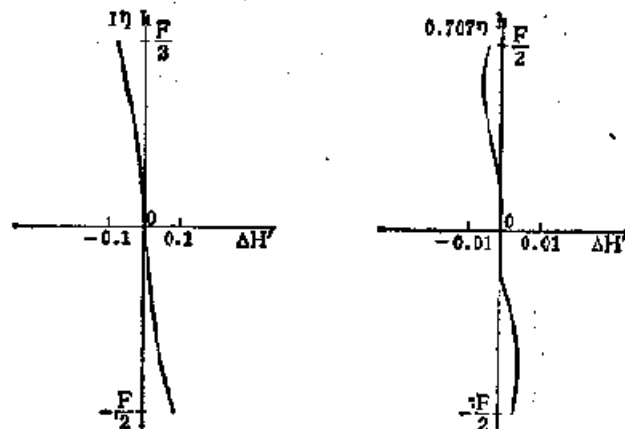
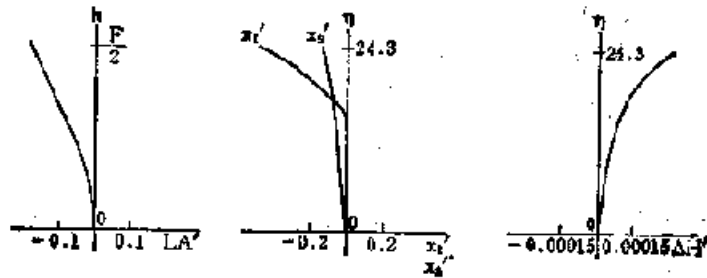
1:1 对称换向镜头

E.F.L=100 B.F.L=75.838 FNo.=2 F.A.= $\beta=1^*$ $\lambda=436\sim 656m\mu$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|----------|-------|---------|------|----|---------|-------|---------|------|
| 1 | 285.84 | 1.6 | 1.62004 | 36.3 | 10 | -17.93 | 1.71 | 1.62004 | 36.3 |
| 2 | 71.95 | 8.0 | 1.62041 | 60.3 | 11 | 59.04 | 8.91 | 1.64831 | 33.8 |
| 3 | -116.23 | 0.12 | | | 12 | 1027.80 | 10.85 | 1.62041 | 60.3 |
| 4 | 62.24 | 6.05 | 1.62041 | 60.3 | 13 | -31.58 | 0.12 | | |
| 5 | 544.73 | 0.12 | | | 14 | -544.73 | 6.05 | 1.62041 | 60.3 |
| 6 | 31.58 | 10.85 | 1.62041 | 60.3 | 15 | -62.24 | 0.12 | | |
| 7 | -1027.80 | 8.91 | 1.64831 | 33.8 | 16 | 116.23 | 8.0 | 1.62041 | 60.3 |
| 8 | -59.04 | 1.71 | 1.62004 | 36.3 | 17 | -71.95 | 1.6 | 1.62004 | 36.3 |
| 9 | 17.93 | 19.53 | | | 18 | -285.84 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------|
| | -0.0088 | -0.0010 | 0.0094 | -0.018 | 0.0011 | -24.30 | -0.0013% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | K_{T2} |
| 100 | -0.19 | 0.00033 | -0.49 | 0.15 | -0.34 | -0.0028 | -0.0011 |
| 70 | -0.12 | 0.00010 | -0.025 | -0.11 | 0.084 | 0.00037 | -0.000086 |



编号: 01-00-108

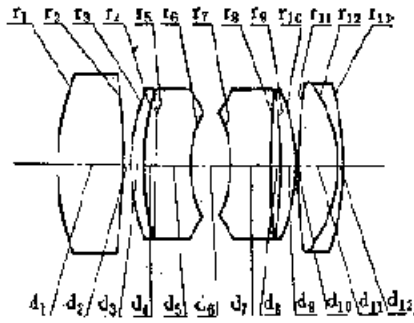
具有双分离负双透镜的高斯型摄影物镜

E. F. L = 100

B. F. L = 49.54

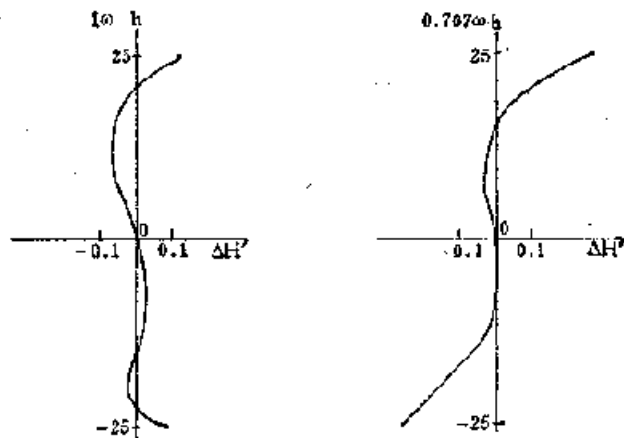
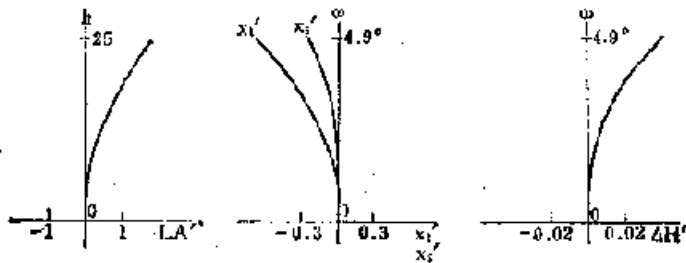
FNo. = 2

F. A. = $\pm 4.9^\circ$



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|---------|-------|---------|-------|----|---------|-------|---------|-------|
| 1 | 66.300 | 17.42 | 1.75510 | 47.2 | 8 | 242.60 | 2.18 | | |
| 2 | -192.96 | 2.23 | | | 9 | -133.01 | 4.63 | 1.69680 | 56.2 |
| 3 | 46.049 | 4.70 | 1.65820 | 57.2 | 10 | -50.695 | 0.51 | | |
| 4 | 108.97 | 2.36 | | | 11 | 138.25 | 10.95 | 1.68235 | 48.2 |
| 5 | -352.51 | 10.08 | 1.69873 | 30.1 | 12 | -37.751 | 1.41 | 1.62032 | 60.3 |
| 6 | 33.510 | 10.92 | | | 13 | -33.381 | | | |
| 7 | -33.285 | 12.15 | 1.61633 | 31.0 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | 0.22 | -0.036 | -0.023 | -0.0048 | 0.020 | 8.61 | 0.49% |
| h 或 ω % | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K_{f1} | $K_{f0.7}$ |
| 100 | 1.83 | 0.042 | -0.66 | 0.23 | -0.42 | 0.098 | -0.086 |
| 70 | 0.93 | 0.014 | -0.31 | -0.11 | -0.20 | 0.0075 | -0.042 |



编号: 01-00-109

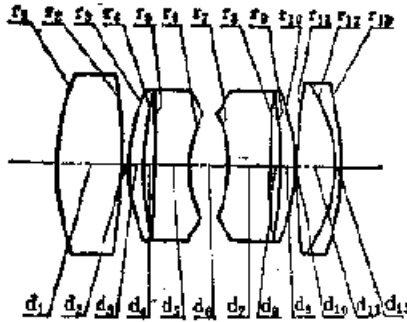
具有双分离负双透镜的高斯型摄影物镜

E. F. L = 100

B. F. L = 46.92

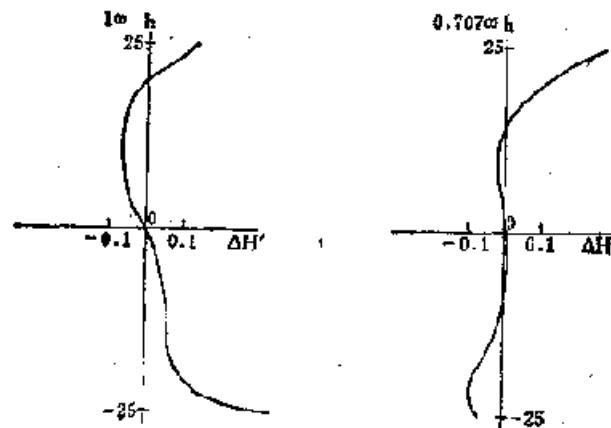
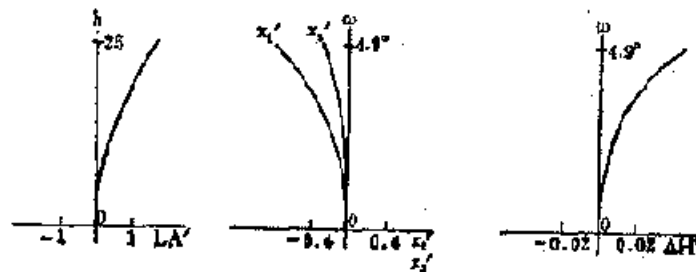
FNo. = 2

F. A. = $\pm 4.9^\circ$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|---------|-------|---------|------|----|---------|-------|---------|------|
| 1 | 65.1067 | 12.84 | 1.71289 | 53.8 | 8 | 308.53 | 7.67 | | |
| 2 | -146.65 | 0.14 | | | 9 | -139.36 | 4.76 | 1.69680 | 56.2 |
| 3 | 49.156 | 5.12 | 1.71289 | 53.8 | 10 | -61.245 | 1.74 | | |
| 4 | 153.739 | 2.17 | | | 11 | 202.18 | 11.00 | 1.71289 | 53.8 |
| 5 | -250.53 | 10.72 | 1.67250 | 32.0 | 12 | -35.499 | 1.98 | 1.63918 | 45.2 |
| 6 | 32.111 | 11.34 | | | 13 | -111.72 | | | |
| 7 | -37.637 | 8.55 | 1.61700 | 36.6 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | III | QP(1 ∞) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | 0.21 | -0.021 | -0.020 | -0.0038 | 0.021 | 8.62 | 0.53% |
| h 或 ω % | LA' | $\Delta H'$ | x'_e | x'_i | $x'_i - x'_e$ | K_{T1} | $K_{T0.7}$ |
| 100 | 1.57 | 0.045 | -0.81 | -0.27 | -0.53 | 0.23 | 0.011 |
| 70 | 0.85 | 0.015 | -0.39 | -0.13 | -0.25 | 0.10 | -0.0087 |



编号: 01-00-110

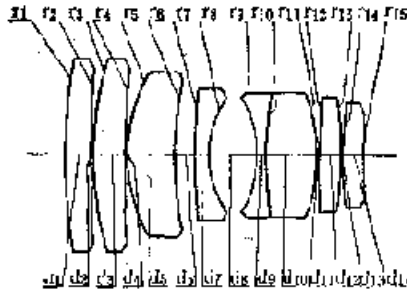
高分辨率透镜系统

E. F. L = 100

B. F. L = 45.94

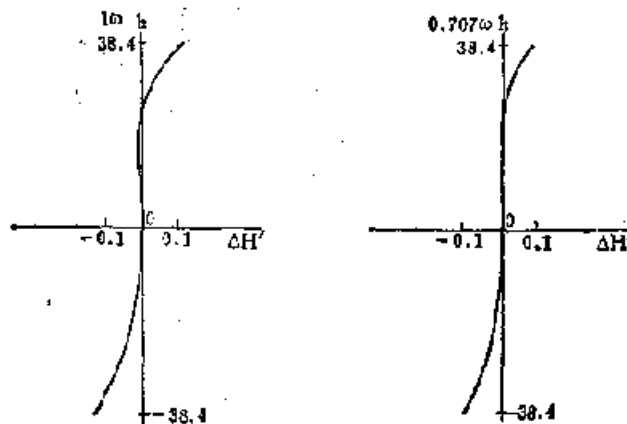
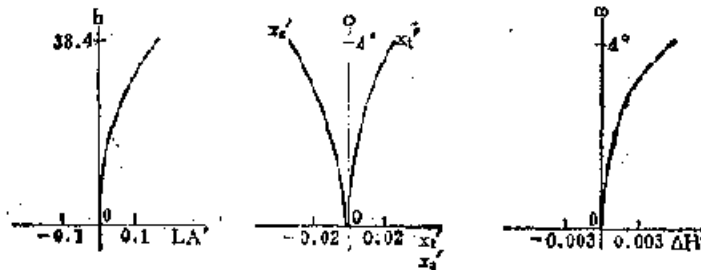
FNo. = 1.3

F. A. = $\pm 4^\circ$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|-------|-------|---------|-------|----|---------|-------|---------|-------|
| 1 | 155.0 | 10.20 | 1.77252 | 49.6 | 9 | -41.5 | 4.00 | 1.57046 | 42.8 |
| 2 | 449.3 | 0.24 | | | 10 | 143.0 | 18.00 | 1.79025 | 50.1 |
| 3 | 123.0 | 12.00 | 1.73232 | 54.8 | 11 | -69.8 | 0.20 | | |
| 4 | 413.3 | 0.24 | | | 12 | 375.8 | 8.00 | 1.79025 | 50.1 |
| 5 | 57.0 | 17.70 | 1.67280 | 57.3 | 13 | -153.3 | 0.20 | | |
| 6 | 114.5 | 7.17 | | | 14 | 167.7 | 8.00 | 1.77752 | 50.6 |
| 7 | 220.4 | 5.40 | 1.81262 | 25.5 | 15 | -2058.7 | | | |
| 8 | 36.8 | 18.00 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | 0.018 | -0.018 | 0.0086 | -0.019 | 0.0042 | 6.99 | 0.081% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.15 | 0.0057 | 0.023 | -0.034 | 0.058 | -0.0080 | -0.023 |
| 70 | 0.061 | 0.0019 | 0.011 | -0.018 | 0.029 | -0.0038 | -0.016 |



编号: 01-00-111

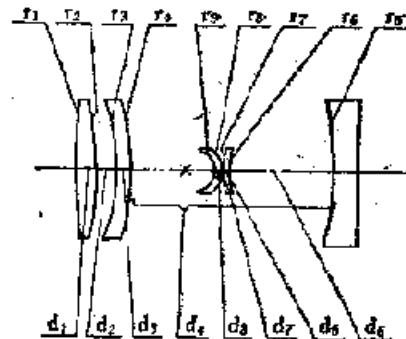
大孔径折反射物镜

E. F. L = 140

B. F. L = -12

FNo. = 0.95

F. A. = 5°



| 序 号 | r | d | n | v |
|-----|---------------------|--------|---------|-------|
| 1 | 1710.0 | 19.0 | 1.51872 | 64.17 |
| 2 | -455.5 | 21.6 | | |
| 3 | -178.4 | 10.5 | 1.51872 | 64.17 |
| 4 | -376.7 | 224.2 | | |
| 5 | -376.7 ⁺ | -118.6 | | |
| 6 | 145.6 | -6.2 | | |
| 7 | 147.5 | -1.0 | 1.51872 | 64.17 |
| 8 | -30.3 | -6.2 | | |
| 9 | -25.5 | | 1.51872 | 64.17 |

+ 表示反射面。

编号: 01-00-112

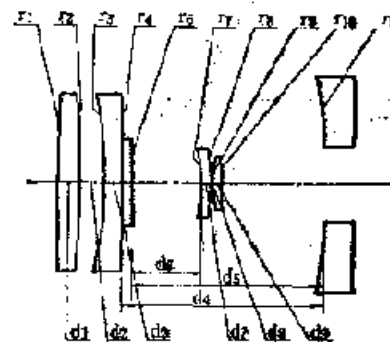
大孔径折反射物镜

E. F. L = 414

B. F. L = 40

FNo. = 1.2

F. A. = 5.8°



| 序 号 | r | d | n | v |
|-----|-----------------------|------|---------|-------|
| 1 | 2221.8 | 34 | 1.51872 | 64.71 |
| 2 | -1313.0 | 35 | | |
| 3 | -609.9 | 25 | 1.51872 | 64.71 |
| 4 | -2175.0 | 301 | | |
| 5 | -921.5 ⁺ | -291 | | |
| 6 | ∞ ⁺ | 103 | | |
| 7 | -170.6 | 12 | 1.72311 | 29.51 |
| 8 | -276.4 | 3 | | |
| 9 | 176.8 | 12 | 1.51872 | 64.17 |
| 10 | -254.0 | | | |

+ 表示反射面。

编号: 01-00-113

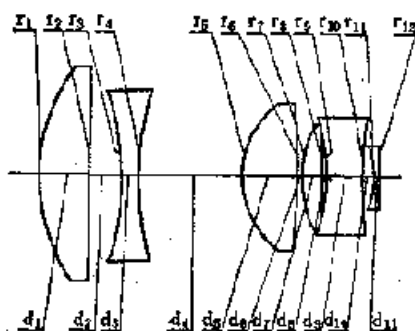
六片式珀兹伐型放映镜头

E. F. L = 100

B. F. L = 13.45

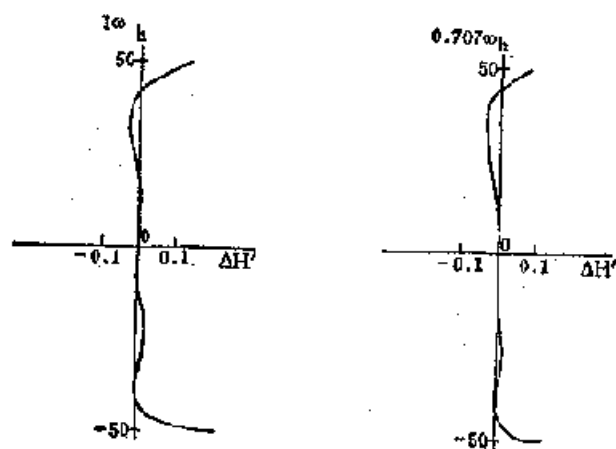
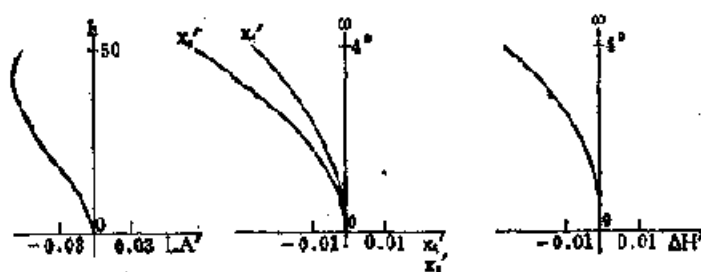
FNo. = 1.0

F. A. = 8°



| 序号 | r | d | n_D | v_D | 序号 | r | d | n_D | v_D |
|----|--------|------|-------|-------|----|----------|------|-------|-------|
| 1 | 107.3 | 27.6 | 1.713 | 53.9 | 7 | 63.48 | 10.7 | 1.713 | 53.9 |
| 2 | 870.3 | 17.1 | | | 8 | -2645 | 1.99 | | |
| 3 | -154.3 | 11.4 | 1.728 | 28.3 | 9 | -151.9 | 22.5 | 1.755 | 27.5 |
| 4 | 232.0 | 56.8 | | | 10 | 321.0 | 4.95 | | |
| 5 | 51.24 | 30.0 | 1.516 | 64.0 | 11 | -60.70 | 3.18 | 1.755 | 27.5 |
| 6 | -325.1 | 2.27 | | | 12 | ∞ | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.11 | 0.0029 | 0.0044 | -0.026 | -0.025 | 3.99 | -0.37% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | -0.060 | -0.026 | -0.035 | -0.043 | 0.017 | 0.16 | -0.012 |
| 70 | -0.060 | -0.0091 | -0.013 | -0.021 | 0.0087 | 0.09 | -0.011 |



编号, 01-00-114

摄影物镜

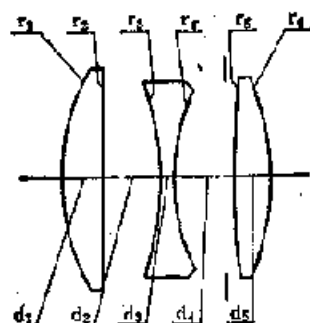
E. F. L = 100

B. F. L =

FNo. = 2.8

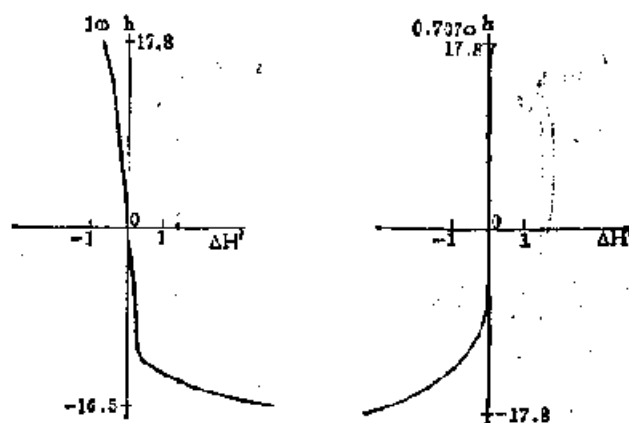
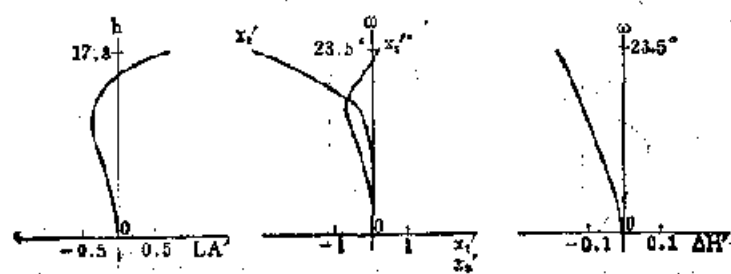
F. A. = 47°

Lp' = 10°



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|----------|--------|---------|-------|----|--------|--------|--------|-------|
| 1 | 42.81 | 7.476 | 1.65844 | 59.84 | 4 | 41.27 | 11.265 | | |
| 2 | -7013.04 | 10.241 | | | 5 | 167.23 | 6.798 | 1.6910 | 34.80 |
| 3 | -60.91 | 2.969 | 1.67270 | 32.23 | 6 | -47.56 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.1 | 0.588 | 0.028 | -0.2 | -0.07 | 46.4 | -0.4% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.69 | -0.18 | -3.3 | 0.002 | -3.3 | 6.04 | -0.11 |
| 70 | 0.38 | -0.125 | -0.3 | -0.87 | 0.57 | -1.9 | -0.28 |



● 此系参考数据。

编号: 01-00-115

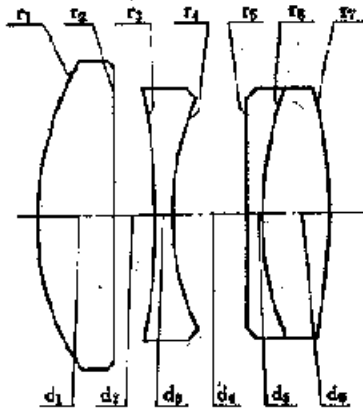
摄影物镜

E. F. L. = 100

B. F. L. =

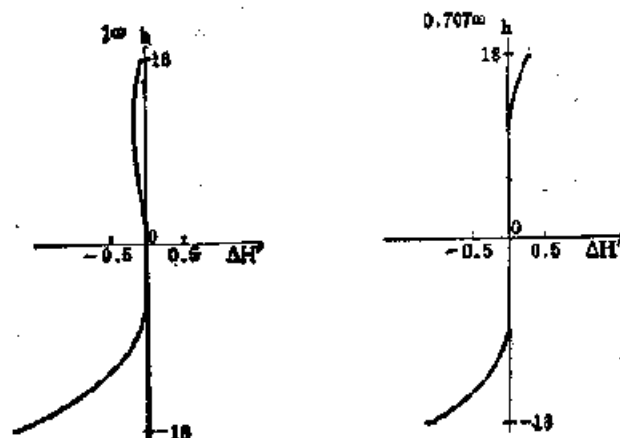
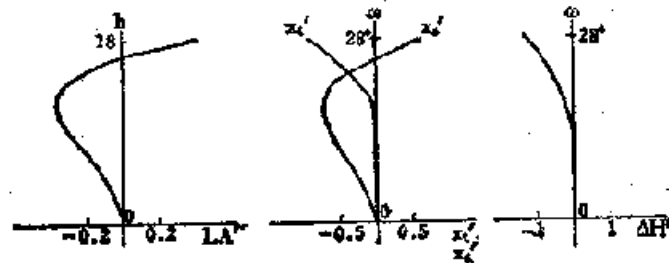
FNo. = 2.8

F. A. = 58°



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|---------|-------|--------|-------|----|---------|------|--------|-------|
| 1 | 39.265 | 10.32 | 1.7130 | 53.89 | 5 | 262.753 | 2.39 | 1.6261 | 39.19 |
| 2 | 283.685 | 5.69 | | | 6 | 50.234 | 9.49 | 1.7550 | 53.28 |
| 3 | -99.940 | 2.53 | 1.6256 | 36.75 | 7 | -69.533 | | | |
| 4 | 35.715 | 9.63 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.09 | 0.0079 | 0.04 | -0.22 | -0.2 | 53 | 2.7% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_3 - x'_4$ | K'_{T1} | K'_{T2-7} |
| 100 | 0.42 | -1.4 | -0.60 | 0.6 | -1.5 | -1.6 | -0.4 |
| 70 | -0.36 | -0.34 | -0.15 | -0.75 | 0.59 | -0.4 | -0.07 |



编号: 01-00-116

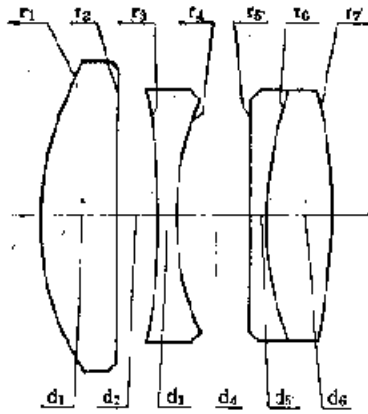
摄影物镜

E. F. L = 100

B. F. L =

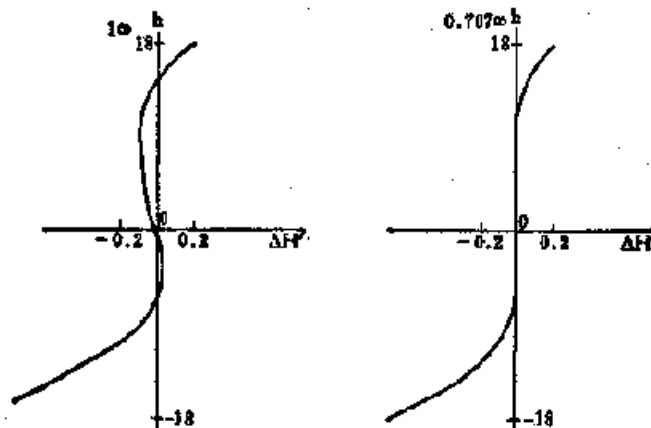
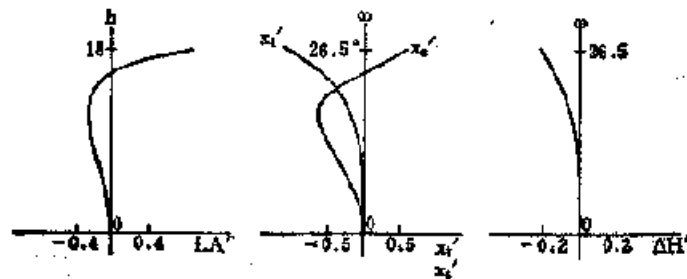
FNo. = 2.8

F. A. = 53°



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|---------|------|--------|-------|----|----------|------|--------|-------|
| 1 | 42.348 | 8.48 | 1.7335 | 51.04 | 5 | ∞ | 2.55 | 1.6204 | 37.97 |
| 2 | 889.654 | 7.25 | | | 6 | 53.647 | 7.61 | 1.7440 | 44.90 |
| 3 | -72.448 | 1.97 | 1.6547 | 32.87 | 7 | -52.794 | | | |
| 4 | 39.706 | 8.95 | | | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | OP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------------|-----------|-------------|
| | -0.10 | 0.02 | 0.03 | -0.19 | -0.03 | 50 | -0.45% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | κ'_c | χ'_s | $\chi'_i - \chi'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.89 | -0.2 | -1.1 | 0.57 | -1.6 | -0.9 | -0.24 |
| 70 | -0.36 | -0.06 | -0.19 | -0.68 | 0.439 | -0.4 | -0.07 |



编号: 01-00-117

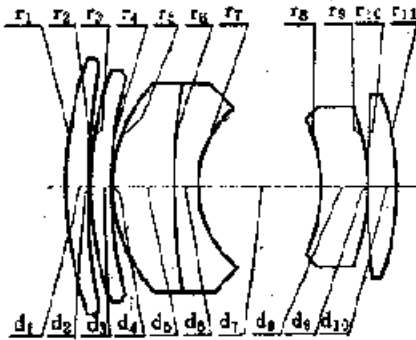
六片式改型高斯摄影物镜

E. F. L = 1.0

B. F. L = 0.5345

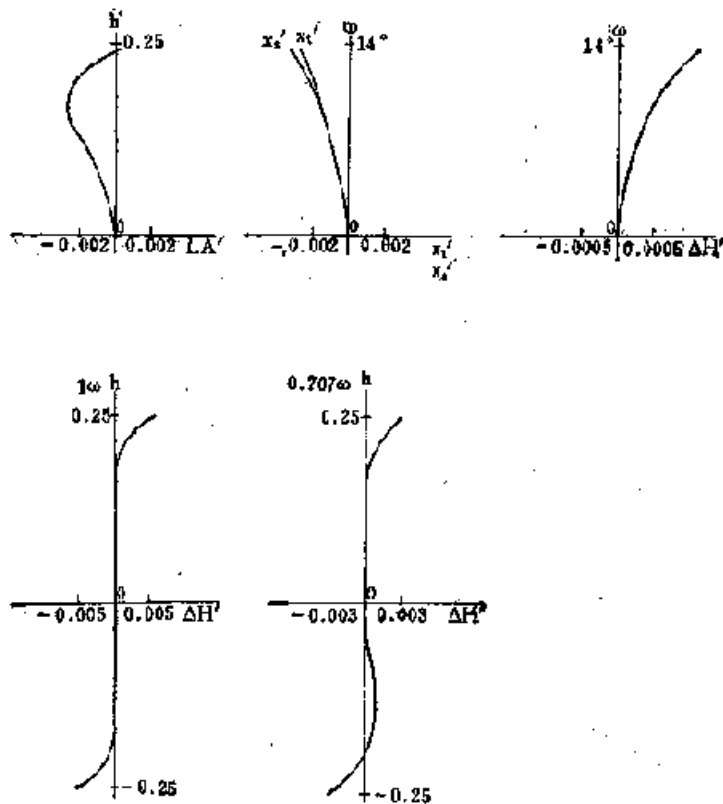
FNo. = 2

F. A. = $\pm 14^\circ$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|---------|---------|---------|-------|----|----------|---------|---------|-------|
| 1 | 0.55202 | 0.05208 | 1.69100 | 54.80 | 7 | 0.21352 | 0.23553 | | |
| 2 | 0.95375 | 0.00056 | | | 8 | -0.30375 | 0.08936 | 1.72825 | 28.34 |
| 3 | 0.57639 | 0.04616 | 1.69100 | 54.80 | 9 | -0.47801 | 0.00059 | | |
| 4 | 0.80828 | 0.00059 | | | 10 | 10.70056 | 0.06155 | 1.69100 | 54.80 |
| 5 | 0.34086 | 0.10770 | 1.69100 | 54.80 | 11 | -0.52482 | | | |
| 6 | 1.90296 | 0.03847 | 1.66680 | 33.09 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | EH | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|------------|------------|
| | -0.0012 | -0.00014 | -0.000016 | 0.00053 | 0.00072 | 0.25 | 0.46% |
| h 或 ω % | LA' | $\Delta H'$ | x_1' | x_2' | $x_1' - x_2'$ | K_{T1} | $K_{T0.7}$ |
| 100 | 0.0000055 | 0.0011 | -0.0025 | -0.0023 | 0.00027 | 0.00068 | 0.00012 |
| 70 | -0.0027 | 0.00046 | -0.0018 | -0.0013 | -0.000502 | -0.0000019 | -0.00008 |



编号: 01-00-118

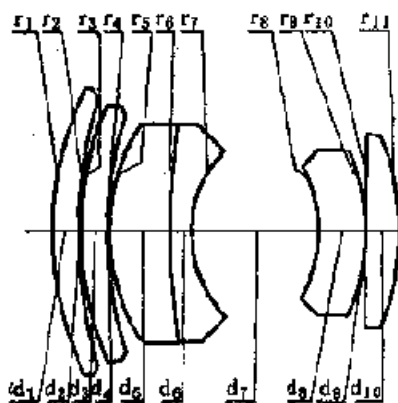
六片式改型高斯摄影物镜

E. F. L = 1.0

B. F. L = 0.4984

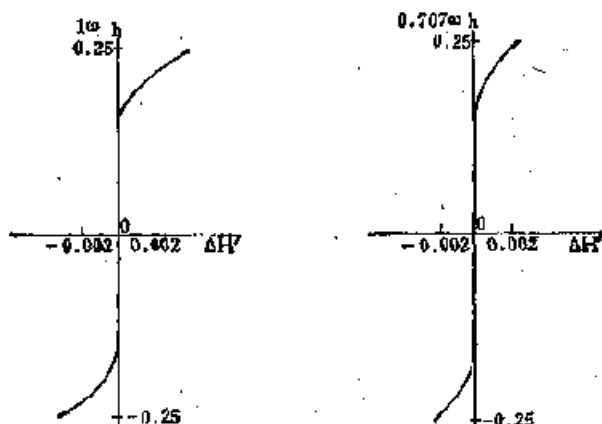
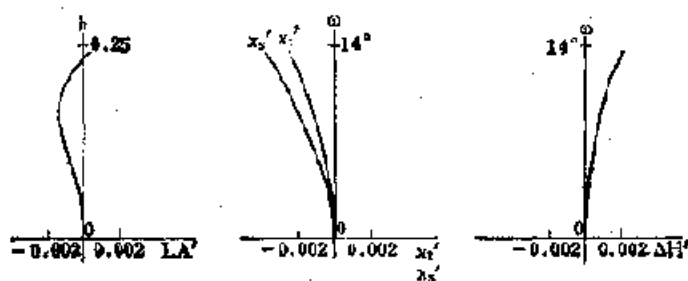
FNo. = 2

F. A. = $\pm 14^\circ$



| 序号 | r | d | n_d | v_d | 序号 | r | d | n_d | v_d |
|----|---------|---------|---------|-------|----|----------|---------|---------|-------|
| 1 | 0.74045 | 0.05378 | 1.62041 | 60.29 | 7 | 0.21479 | 0.25122 | | |
| 2 | 1.70593 | 0.00119 | | | 8 | -0.31907 | 0.10120 | 1.78472 | 25.51 |
| 3 | 0.68906 | 0.04167 | 1.62041 | 60.29 | 9 | -0.45729 | 0.00060 | | |
| 4 | 1.03103 | 0.00119 | | | 10 | 3.16788 | 0.05715 | 1.62041 | 60.29 |
| 5 | 0.33074 | 0.11906 | 1.69100 | 54.80 | 11 | -0.60101 | | | |
| 6 | 1.27493 | 0.05001 | 1.66090 | 32.83 | | | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | OP(1%) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-------------|
| | -0.00070 | -0.00013 | 0.000047 | 0.00070 | 0.0011 | 0.24 | 0.84% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t - x'_s$ | K'_{T1} | $K'_{T0.7}$ |
| 100 | 0.00025 | 0.002 | -0.0025 | -0.0026 | 0.0011 | 0.00088 | 0.00007 |
| 70 | -0.0015 | 0.00079 | -0.0018 | -0.0022 | 0.00045 | 0.0061 | -0.00007 |



编号: 01-00-119

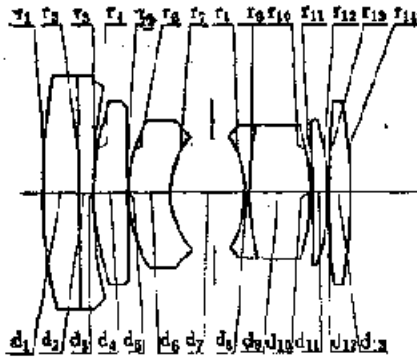
摄影物镜

E. F. L = 1.0

B. F. L = 0.6789

FNo. = 1.4

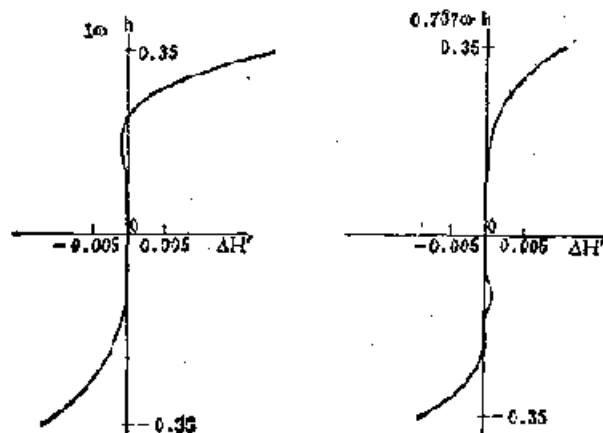
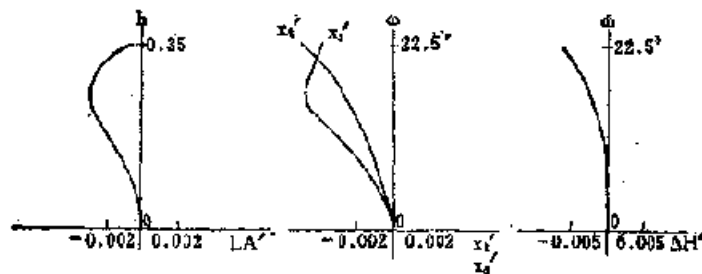
F. A. = $\pm 22.5^\circ$



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|----------|----------|---------|-------|----|-----------|---------|---------|-------|
| 1 | 1.97579 | 0.11518 | 1.78443 | 43.77 | 8 | -0.39730 | 3.05339 | 1.80518 | 25.46 |
| 2 | -7.17419 | 0.08009 | 1.72151 | 28.28 | 9 | 1.03012 | 0.18990 | 1.78443 | 43.77 |
| 3 | 2.03690 | 0.01225 | | | 10 | -0.69229 | 0.00095 | | |
| 4 | 0.86394 | 0.13780 | 1.78443 | 43.77 | 11 | -17.76637 | 0.06865 | 1.78443 | 43.77 |
| 5 | 2.73433 | 0.00341 | | | 12 | -0.92290 | 0.00095 | | |
| 6 | 0.49091 | 0.14512 | 1.80518 | 25.46 | 13 | 3.31300 | 0.05721 | 1.78443 | 43.77 |
| 7 | 0.33916 | 0.26299* | | | 14 | -2.16591 | | | |

0.26299* = 0.13600 + 0.13299

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|--------------|-----------|-------------|
| | -0.0023 | 0.00064 | 0.00095 | 0.0045 | -0.0046 | 0.41 | -1.5% |
| h 或 $\omega\%$ | LA' | $\Delta H'$ | x'_t | x'_s | $x'_t x'_s$ | K'_{II} | $K'_{Ta.7}$ |
| 100 | -0.0004 | -0.0062 | -0.0052 | -0.0042 | -0.0008 | 0.0018 | -0.0005 |
| 70 | -0.0028 | -0.0025 | -0.0025 | -0.0050 | -0.0028 | 0.0008 | 0.0002 |



编号, 01-00-120

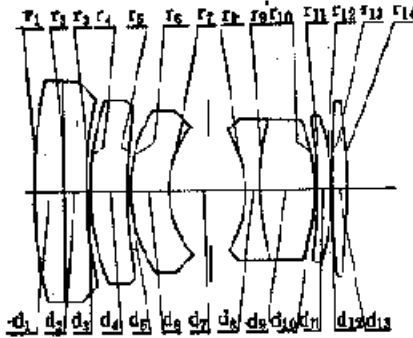
摄影物镜

E.F.L=1.0

B.F.L=0.6753

FNo. = 1.4

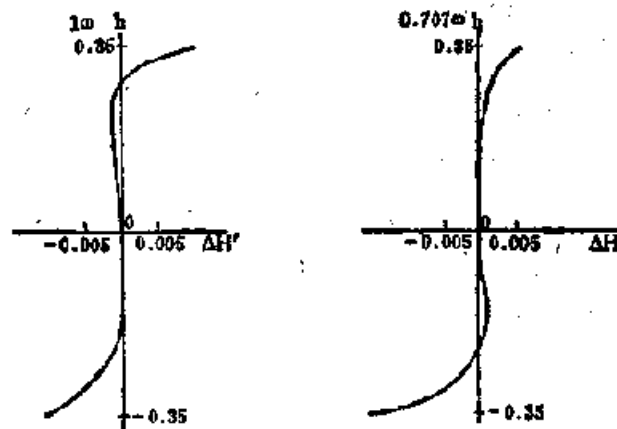
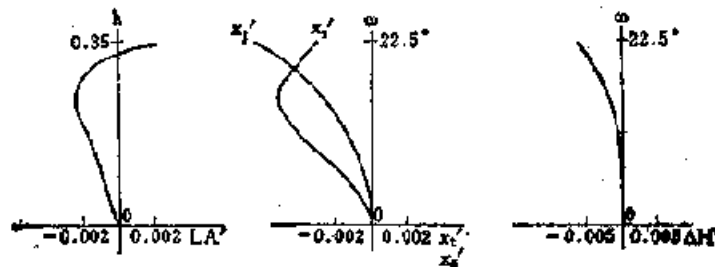
F.A. = $\pm 22.5^\circ$



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|----------|----------|---------|-------|----|----------|---------|---------|-------|
| 1 | 2.11494 | 0.12622 | 1.73443 | 43.77 | 8 | 0.38986 | 0.02867 | 1.80518 | 25.46 |
| 2 | -6.13521 | 0.05737 | 1.72151 | 29.28 | 9 | 1.20862 | 0.21037 | 1.78443 | 43.77 |
| 3 | 1.60543 | 0.00191 | | | 10 | -0.87370 | 0.00191 | | |
| 4 | 0.93127 | 0.12239 | 1.73443 | 43.77 | 11 | -8.18072 | 0.06885 | 1.78443 | 43.77 |
| 5 | 3.21568 | 0.00191 | | | 12 | -0.87919 | 0.00096 | | |
| 6 | 0.46674 | 0.15299 | 1.80518 | 25.46 | 13 | 3.03021 | 0.08692 | 1.78443 | 43.77 |
| 7 | 0.33282 | 0.28304* | | | 14 | -2.20895 | | | |

$$0.28304^* = 0.18000 + 0.10304$$

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|----------------|--------------|--------------|--------------|--------------|---------------|----------|-----------------|
| | -0.0024 | 0.00093 | 0.00073 | -0.0043 | -0.0046 | 0.41 | -1.4% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K_{T1} | $K'_{T0.1}$ |
| 100 | 0.0021 | -0.006 | -0.0062 | -0.0032 | -0.0029 | -0.006 | -0.0014 |
| 70 | -0.0023 | -0.0025 | -0.0026 | -0.0048 | 0.0021 | -0.0054 | -0.00047 |



编号: 01-00-121

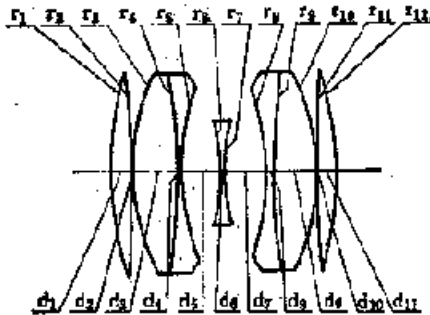
物 镜

E.F.L=1.0

B.F.L=

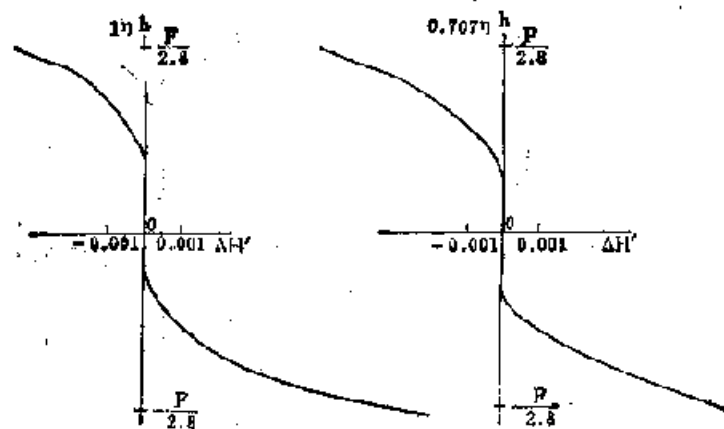
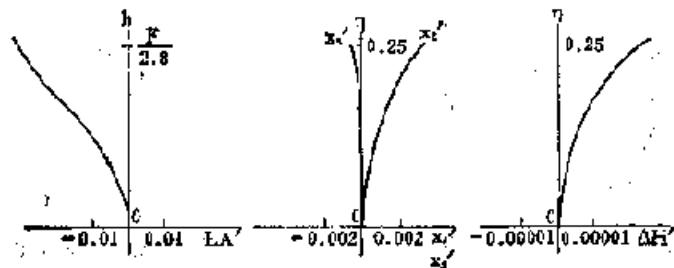
FNo.=2.8

F.A.=



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|----------|---------|-------|------|----|----------|---------|-------|------|
| 1 | 0.85427 | 0.05664 | 1.720 | 50.3 | 7 | 0.63219 | 0.10456 | | |
| 2 | -3.1321 | 0 | | | 8 | -0.72631 | 0.10743 | 1.613 | 36.9 |
| 3 | 0.59031 | 0.12025 | 1.613 | 50.3 | 9 | 1.7723 | 0.12025 | 1.613 | 50.3 |
| 4 | -1.7723 | 0.01743 | 1.613 | 36.9 | 10 | -0.59031 | 0 | | |
| 5 | 0.72631 | 0.10456 | | | 11 | 3.1321 | 0.05664 | 1.720 | 50.3 |
| 6 | -0.63219 | 0.01742 | 1.613 | 36.9 | 12 | -0.85427 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | III | $Q^2(1\omega)$ |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|----------------|
| | -0.0029 | 0.00037 | 0.00012 | -0.00014 | 0.0000097 | 0.126 | -0.919% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{11} | $K'_{12,7}$ |
| 100 | -0.033 | 0.000024 | 0.0034 | -0.00023 | 0.0037 | 0.0018 | 0.0013 |
| 70 | -0.02 | 0.000009 | 0.0017 | -0.00013 | 0.0018 | 0.0012 | 0.0009 |



编号: 01-00-122

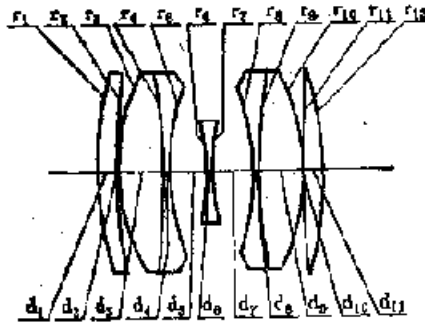
物 镜

E.F.L.=1.0

B.F.L.=

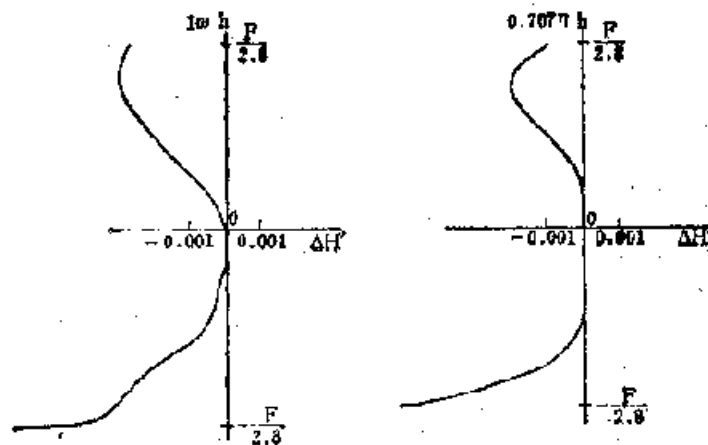
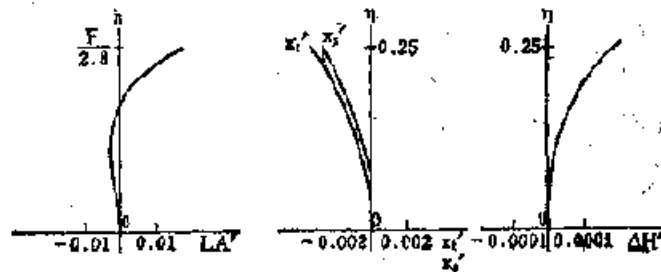
FN₀ = 2.8

F.A. =



| 序号 | r | d | n _d | v | 序号 | r | d | n _d | v |
|----|----------|---------|----------------|---|----|----------|---------|----------------|---|
| 1 | 3.63532 | 0.03898 | 1.72050 | 3 | 7 | 0.45604 | 0.02776 | | |
| 2 | 23.0321 | 0 | | | 8 | -0.72446 | 0.01742 | 1.61338 | 9 |
| 3 | 0.63321 | 0.14622 | 1.61359 | 3 | 9 | -0.04629 | 0.17042 | 1.61359 | 3 |
| 4 | ∞ | 0.01743 | 1.61338 | 9 | 10 | -0.52913 | 0.00908 | | |
| 5 | 0.70192 | 0.06061 | | | 11 | 1.33561 | 0.23218 | 1.72050 | 3 |
| 6 | -1.04929 | 0.02194 | 1.61338 | 9 | 12 | -1.31201 | | | |

| | ΣS ₁ | ΣS ₂ | ΣS ₃ | ΣS ₄ | ΣS ₅ | HI | QP(1%) |
|--------|-----------------|-----------------|-----------------|-----------------|--------------------------------|-----------------|-----------------|
| | -0.00051 | -0.00037 | -0.0000079 | -0.00012 | 0.000053 | 0.15 | -0.12% |
| h 或 ω% | LA' | ΔH' | x _e | x _s | x _e -x _s | K _{T1} | K _{T2} |
| 100 | 0.017 | 0.00018 | -0.0033 | -0.00293 | -0.0004 | -0.004 | -0.002 |
| 70 | 0.00012 | 0.00006 | -0.00169 | -0.0015 | -0.00019 | -0.003 | -0.0014 |



编号: 01-00-123

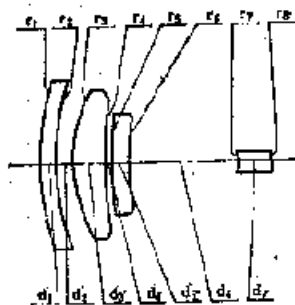
红 外 远 摄 物 镜

E. F. L = 100

B. F. L = 1.48

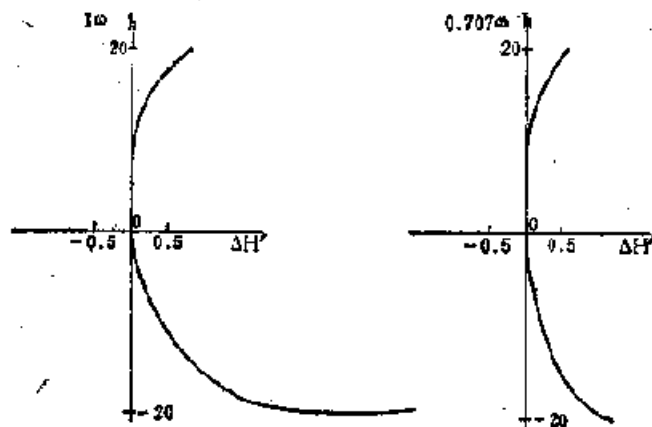
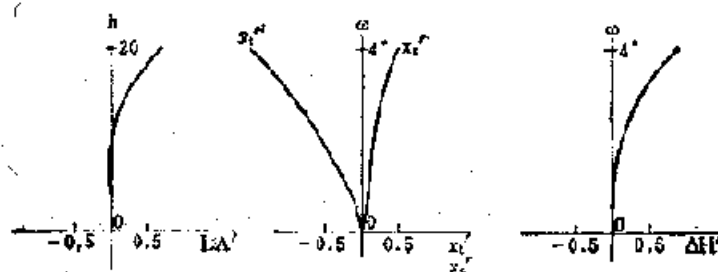
FNo. = 2.5

F. A. = $\pm 4^\circ$



| 序号 | r | d | n | v | 序号 | r | d | n | v |
|----|-------|------|------|-----|----|--------|------|------|-----|
| 1 | 66.04 | 4.6 | 3.42 | | 5 | 193.7 | 4.9 | 1.02 | |
| 2 | 61.72 | 5.0 | | | 6 | 72.0 | 30.0 | | |
| 3 | 41.60 | 8.6 | 3.42 | | 7 | -7.92 | 9.3 | 1.02 | |
| 4 | 118.6 | 2.05 | | | 8 | -26.66 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(1 ω) |
|------------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------------|
| | -0.0047 | 0.082 | -0.080 | 0.12 | 0.25 | 7.4 | 11% |
| h 或 ω % | LA' | $\Delta H'$ | x'_1 | x'_2 | $x'_1 - x'_2$ | K'_{T1} | $K'_{T0.1}$ |
| 100 | 0.69 | 0.83 | -1.55 | 0.49 | -2.03 | 2.5 | 0.5 |
| 70 | 0.14 | 0.26 | -0.79 | 0.28 | -1.07 | 0.8 | 0.28 |



编号: 01-00-124

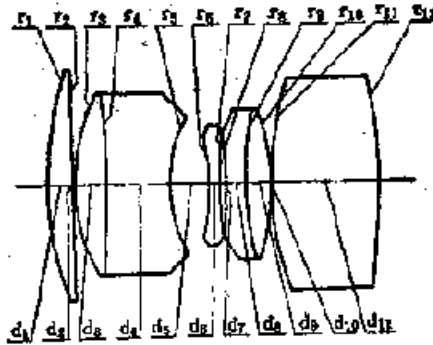
透 镜 系 统

E. F. L. = 1.0

B. F. L. =

FNo. = 2

F. A. = $\pm 20^\circ$



| 序号 | r | d | n_d | v | 序号 | r | d | n_d | v |
|----|---------|--------|--------|------|----|---------|--------|--------|------|
| 1 | 0.9144 | 0.0700 | 1.6910 | 54.8 | 7 | 1.3921 | 0.0165 | | |
| 2 | -20.559 | 0 | | | 8 | -1.5615 | 0.0618 | 1.7484 | 27.8 |
| 3 | 0.5288 | 0.0386 | 1.6258 | 35.7 | 9 | 1.2955 | 0.0676 | 1.6910 | 54.8 |
| 4 | -2.3553 | 0.1794 | 1.6484 | 27.8 | 10 | -0.5568 | 0 | | |
| 5 | 0.3939 | 0.1097 | | | 11 | 0.9260 | 0.3016 | 1.6910 | 54.8 |
| 6 | -0.5513 | 0.0300 | 1.5097 | 64.4 | 12 | -1.5483 | | | |

| | ΣS_1 | ΣS_2 | ΣS_3 | ΣS_4 | ΣS_5 | HI | QP(100) |
|----------------|--------------|--------------|--------------|--------------|---------------|-----------|-----------|
| | -0.0019 | -0.00033 | -0.000044 | -0.0034 | -0.0029 | 0.32 | 2.8% |
| h 或 ω % | LA' | $\Delta H'$ | x'_e | x'_s | $x'_e - x'_s$ | K'_{T1} | K'_{T2} |
| 100 | -0.01 | 0.009 | -0.03 | -0.013 | -0.018 | -0.00091 | -0.00028 |
| 70 | -0.0067 | 0.0028 | -0.013 | -0.0098 | -0.0032 | -0.002 | -0.00085 |

