# Geneva - Golay - 1962

General purpose system. Photometry of stars in clusters, associations and double systems.

## GENERAL INFORMATION

| | |
|---|---|
| AUTHORS | M. Golay |
| TELESCOPE | 1m (reflector), Haute-Provence Obs. ;<br>0.40m (reflector), Jungfraujoch Obs; ESO. |
| DETECTOR | northern emisphere: Victor VI [211]<br>southern emisphere: EMI 9502−AM |
| MAIN ARTICLE | Golay, M. 1962 Pub. Obs. Genève No 15 (série A), 29 |

## SYSTEM DESCRIPTION

BANDS DESCRIPTION [285], pg 369

| band | filter | $\lambda_0$ (Å) | half-width (Å) |
|---|---|---|---|
| $U$ | 4mm Schott UG11 | 3456 | 465 |
| $B_1$ | 2mm Schott GG 13 + 4mm Schott UG 3 + 1mm Schott BG 23 | 4024 | 395 |
| $B$ | 2mm Schott BG 12 + 2mm Schott GG 13 | 4245 | 810 |
| $B_2$ | 3mm Schott BG 25 + 4mm Schott GG 3 | 4480 | 415 |
| $V_1$ | 2mm Schott OG 4 + 3mm Schott BG 18 | 5405 | 465 |
| $V$ | 2mm Schott OG 4 | 5500 | 725 |
| $G$ | 1.5mm Corning 3-67 | 5805 | 440 |

## SYSTEM ANALYSIS

### REDDENING RATIOS [118]

$E(U-B_2) = 1.186\,E(B_2-V_1)$ for reddened O-stars.

$E(B-V)_{Johnson} = 1.14\,E(B_2-V_1)$

### REDDENING-FREE PARAMETERS

Golay reddening-free parameters: [285], pg 371

$d = (U-B_1) - 1.430\,(B_1-B_2)$ : measures the Balmer jump. Almost blanketing-free.

$\Delta = (U-B_2) - 0.832\,(B_2-G)$ : measures the Balmer jump. Also sensitive to metallic line-blocking.

$g = (B_1-B_2) - 1.357\,(V_1-G)$ : measures the violet line-blocking. Sensitive to blanketing.

$m_2 = (B_1-B_2) - 0.457\,(B_2-V_1) = 0.550\,\Delta - 0.550\,d - 0.337\,g$ : measures the violet line-blocking. [118]

Cramer and Maeder reddening-free parameters: [78]

$X = 0.3788 + 1.3764\,U - 1.2162\,B_1 - 0.8498\,B_2 - 0.1554\,V_1 + 0.8450\,G$ : temperature indicator.

$Y = -0.8288 + 0.3235\,U - 2.3228\,B_1 + 2.3363\,B_2 + 0.7495\,V_1 - 1.0865\,G$ : gravity indicator.

$Z = -0.4572 + 0.0255\,U - 0.1740\,B_1 + 0.4696\,B_2 - 1.1205\,V_1 + 0.7994\,G$ :
related to intensity of the surface magnetic fields (Ap phenomenon).

## RELATIONS WITH OTHER SYSTEMS [116]

### *UBV* - Johnson and Morgan - 1953

for A0-G8 stars:

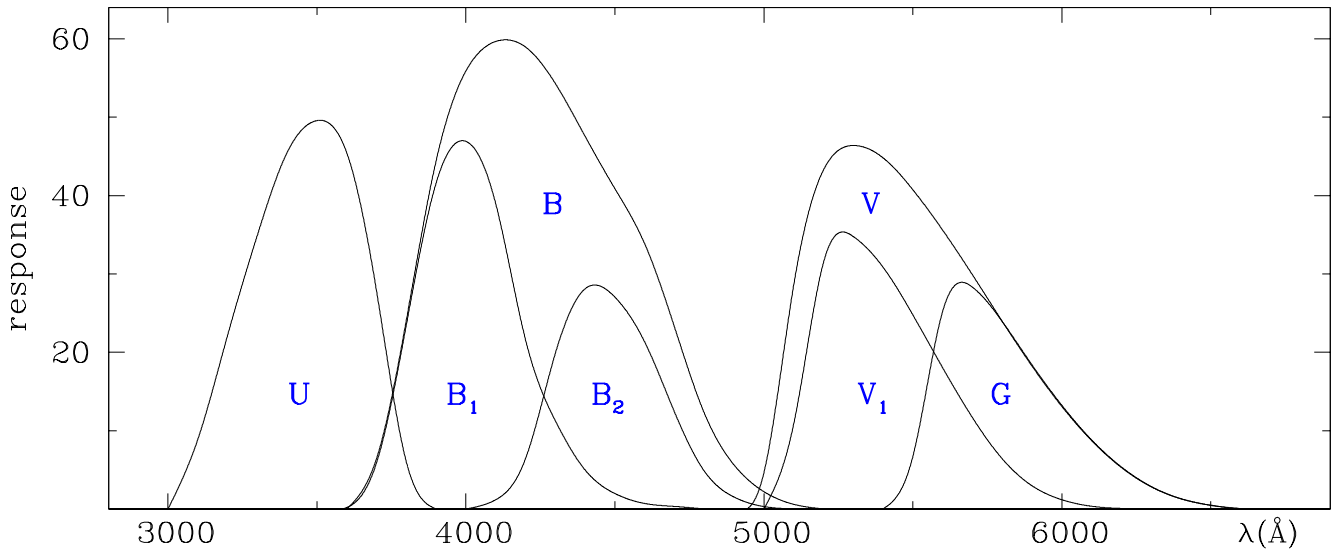
| | | |
|---|---|---|
| $(B-V)$ | = | $1.164\ (\pm 0.005)\ (B_2-V_1) + 0.189\ (\pm 0.004)$ |
| $(B_2-V_1)$ | = | $0.858\ (\pm 0.004)\ (B-V) - 0.162\ (\pm 0.004)$ |

### *uvby Hβ* - Strömgren and Crawford - 1956

for $-0.087 < (B_2-V_1) < +0.440$ (A3-G5 stars):

| | | |
|---|---|---|
| $(B_2-V_1)$ | = | $1.273\ (\pm 0.008)\ (b-y) - 0.142\ (\pm 0.006)$ |
| $(b-y)$ | = | $0.784\ (\pm 0.004)\ (B_2-V_1) + 0.112\ (\pm 0.006)$ |

## TRANSMISSION CURVES [117], pg. 142




| *U* | | *B*1 | | *B* | | *B*2 | | *V*1 | | *V* | | *G* | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| λ (Å) | ϒ (%) | λ (Å) | ϒ (%) | λ (Å) | ϒ (%) | λ (Å) | ϒ (%) | λ (Å) | ϒ (%) | λ (Å) | ϒ (%) | λ (Å) | ϒ (%) |
| 3000 | 0.00 | 3500 | 0.00 | 3600 | 0.00 | 4000 | 0.00 | 5000 | 0.00 | 4900 | 0.00 | 5400 | 0.00 |
| 3100 | 8.89 | 3600 | 0.22 | 3700 | 6.49 | 4100 | 1.20 | 5100 | 10.84 | 5000 | 4.64 | 5500 | 6.73 |
| 3200 | 22.16 | 3700 | 5.93 | 3800 | 24.11 | 4200 | 6.45 | 5200 | 31.46 | 5100 | 28.58 | 5600 | 25.25 |
| 3300 | 34.95 | 3800 | 23.51 | 3900 | 44.44 | 4300 | 19.88 | 5300 | 34.77 | 5200 | 43.29 | 5700 | 28.30 |
| 3400 | 45.50 | 3900 | 41.59 | 4000 | 55.91 | 4400 | 28.10 | 5400 | 30.85 | 5300 | 46.38 | 5800 | 23.97 |
| 3500 | 49.56 | 4000 | 46.91 | 4100 | 59.66 | 4500 | 27.04 | 5500 | 24.75 | 5400 | 44.82 | 5900 | 18.38 |
| 3600 | 45.47 | 4100 | 38.96 | 4200 | 58.94 | 4600 | 21.30 | 5600 | 18.00 | 5500 | 40.73 | 6000 | 13.23 |
| 3700 | 27.82 | 4200 | 21.60 | 4300 | 54.34 | 4700 | 12.38 | 5700 | 11.65 | 5600 | 35.56 | 6100 | 8.79 |
| 3800 | 5.99 | 4300 | 11.24 | 4400 | 47.55 | 4800 | 4.85 | 5800 | 6.41 | 5700 | 29.85 | 6200 | 5.35 |
| 3900 | 0.00 | 4400 | 4.99 | 4500 | 40.87 | 4900 | 1.51 | 5900 | 2.97 | 5800 | 23.94 | 6300 | 2.87 |
| | | 4500 | 1.97 | 4600 | 33.86 | 5000 | 0.32 | 6000 | 1.17 | 5900 | 18.25 | 6400 | 1.31 |
| | | 4600 | 0.74 | 4700 | 23.21 | 5100 | 0.00 | 6100 | 0.36 | 6000 | 13.06 | 6500 | 0.47 |
| | | 4700 | 0.35 | 4800 | 12.24 | | | 6200 | 0.10 | 6100 | 8.72 | 6600 | 0.07 |
| | | 4800 | 0.00 | 4900 | 5.61 | | | 6300 | 0.03 | 6200 | 5.28 | 6700 | 0.00 |
| | | | | 5000 | 2.24 | | | 6400 | 0.00 | 6300 | 2.83 | | |
| | | | | 5100 | 0.61 | | | | | 6400 | 1.29 | | |
| | | | | 5200 | 0.00 | | | | | 6500 | 0.47 | | |
| | | | | | | | | | | 6600 | 0.07 | | |
| | | | | | | | | | | 6700 | 0.00 | | |