

3 EYESIGHT TEST

3.1 *Introduction*

Is the extension of the umbra or the extension of the penumbra the determining factor for the detection of a sunspot by the unaided eye? To solve this question we designed an eyesight test and measured together with 10 experienced sunspot observers their visibility limit. This second part of the present paper shows its results.

3.2 *Design and method*

To keep all dimensions convenient we calculated the eyesight test for a distance of 10 m. First we stuck coloured 'Suns' with diameters of 93 mm on completely black paper. We took three different colours, which we chose to be as close as possible to the colours of the most common solar filters used today for naked-eye observations: orange as used by 'Inconel' glass filters, blue as used by 'Mylar' filters and white as used by overexposed film sheets. Unfortunately we did not get the right green colour as used in arc-welder's glass filters.

Then we plotted on each 'Sun' 6 indian ink black points and measured them afterwards with a micrometer. Thus we realized artificial sunspots on coloured artificial 'Suns' with diameters between 14 and 71 arcsec.