OPTICAL COMPONENTS FOR THE FLUORESCENCE DETECTORS OF THE PIERRE AUGER EXPERIMENT

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The international Pierre Auger collaboration has started the commissioning of an engineering array on its southern hemisphere experiment site in the province of Mendoza, Argentina. It contains two prototype fluorescence telescopes inside a new building on a hill overlooking the first part of the ground array of particle detectors. These telescopes are designed following a Schmidt layout with large spherical mirrors and a diaphragm system for the reduction of coma aberration. The optical resolution of about 0.5 degree is dominated by spherical aberration. Diamond milled mirror segments machined from aluminium alloy sheets were developed and are used in the prototypes together with glass mirror elements. These aluminium mirrors are very robust and of good optical quality. To increase the signal/noise of the telescopes an annular shaped Schmidt corrector lens is implemented in the diaphragm. The ring enlarges the effective acceptance of the telescopes by about 100corrector ring are made from special PMMA with high UV transmittance. Details of the mirror and lens production are presented. Optical tests and properties of the elements will be discussed.