URL: http://cxc.harvard.edu/ciao3.4/dictionary/effective.html
Last modified: 15 December 2008

Effective Area

The geometric area of a telescope is not the area that must be used to calculate the physical properties of sources in the sky (e.g. flux, surface brightness). Several effects including reflectvity and vignetting, lead to a smaller "effective area". [Note that for grazing incidence X-ray telescopes the geometric area is only the sum of the areas of the annuli presented to the sky, which is much less than the polished surface area.] The effective area has units of cm^2.

In the case of Chandra, the CXC defines effective area to be the product of the mirror geometric area, **reflectivity** (which is a strong function of energy), off-axis **vignetting** (also a function of energy as well as off-axis angle), **detector quantum efficiency** (including any filters), which depends on energy and position on the detector, and diffraction grating efficiency (which is a function of order and energy). This definition is in accord with OGIP standards. A comparison of on-axis effective areas is given in the POG.

See also the instrument map and exposure map entries.

URL: http://cxc.harvard.edu/ciao3.4/dictionary/effective.html
Last modified: 15 December 2008