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Faint Object Spectrograph

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An instrument capable of analyzing the wavelength distribution, from ultraviolet through visible, of light from faint sources

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The Faint Object Spectrograph .~ (fig. 2)~ is a versatile instrument that can obtain the spectra of extremely faint astronomical objects in the ultraviolet and visible wavebands. A spectrum is a distribution of colors, or wavelengths, created by passing a beam of light through a prism.

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A spectrum reveals the nature of the source we are viewing. We can tell whether it is hot or cold, dense or rarified, and even its chemical composition. Analysis of the spectrum also yield the remoteness and relative velocity of the object being studied.

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The spectrograph works by picking up the image of a star, galaxy, interstellar dust cloud or other object that appears on the .~ telescope's~ focal plane as a point of light. Then, via a system of .~ optical mirrors~ and .~ gratings~ that work like prisms, the light beam is spread out, from ultraviolet through the visible.

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The fanned-out beam is recorded on an imaging device called a .~ digicon detector~, which counts the photons of light in each region of the beam. The resulting spectrogram is then transmitted to Earth for study.