

### III. SOLID STATE PHYSICS

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#### A. SOFT X-RAY PHOTOIONIZATION

Preliminary design and construction have begun on an apparatus for measuring photoionization cross sections of various atomic beams in the soft x-ray region, that is, approximately 20-300 Å.

The source of radiation will consist simply of a suitable target bombarded with electrons. The resultant photon emission will be monochromated with a grating. This radiation will bombard the atomic beam. The incident photon flux will be measured by means of a photomultiplier. An electrostatic energy analyzer will disperse the photoelectrons and they shall be counted with an electron multiplier. In this way, the total photoelectric cross section, as well as the individual subshell cross sections, will be obtained as a function of wavelength.

These data will be used in conjunction with our atomic beam soft x-ray spectrometer (Quarterly Progress Report No. 60, p. 79).

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