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Proton Recoil Detectors and Fission Ionization Chambers for Neutron Dosimetry¹ BRENT WILSON, PEGGY MCMAHAN, BRAD BAR-QUEST, MIKE JOHNSON, Lawrence Berkeley National Laboratory — This research involved the creation and development of detectors for the measurement of neutron flux. These detectors will be utilized to obtain dose information for fast neutron irradiations of electronic components, materials, and biological samples in the new neutron beamline at the 88-Inch Cyclotron at Lawrence Berkeley National Laboratory. As a first step, we have developed two well-established neutron detectors - the proton recoil detector and the fission ionization chamber - for the energy range of the neutrons at our facility, 5 to 30 MeV. Using activation foil measurements (to obtain absolute neutron flux) and time-of-flight measurements with a Stilbene detector (to obtain the neutron energy spectra), we can calculate the efficiency of our detectors for both monoenergetic and white spectrum neutrons in this energy range.

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