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**Development of a Simple Positron Age-Momentum Setup**
THOMAS SHEFFIELD, C.A. QUARLES, Texas Christian University — A positron age-momentum setup that uses NIM Bin electronic modules and a conventional multichannel analyzer (MCA) is described. The essential idea is to accumulate a Doppler broadened spectrum (sensitive to the annihilation electron momentum) using a high purity Germanium detector in coincidence with a BaF2 scintillation counter, which also serves as the stop signal in a conventional positron lifetime setup. The MCA that collects the Doppler spectrum is gated by a selected region of the lifetime spectrum. Thus we can obtain Doppler broadening spectra as a function of positron lifetime: an age-momentum spectrum. The apparatus has been used so far to investigate a ZnO sample where the size of different vacancy trapping sites may affect the positron lifetime and the Doppler broadening spectrum. We are also looking at polymer and rubber carbon-black composite samples where differences in the Doppler spectrum may arise from positron trapping or positronium formation in the samples. Correction for background and contribution from the positron source itself to the Doppler spectrum will be discussed.

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