either one of two sets of scalers, (Ortec Model 40) corresponding to positive or negative electric fields in the thallium cell (7). A controller (17) that runs from an internal clock (555 timer) coordinates the laser triggering circuits ((16) and Fig. 9) with the electric field switcher (23) and the sequential analog to digital conversion. The scalers are gated on and off (24) so that one set of scalers (21) stores positive electric field signals and the other set (22) stores negative electric field signals. After 1000 shots, the contents of the scalers are printed out on paper and also punched on paper tape by a Teletype. The electric field switcher can reverse the electric field every n laser pulses (n = 1 to 10), but is generally set to switch the field after every pulse. After each run of ~40 sets of 1000 laser pulses, the data on paper tape is punched out onto computer cards and fed into an IBM 1620 computer.

D. Data Handling

We measure the quantities

$n_{\pm}^{on}$ = scaler counts in the north (-z) direction taken on resonance for + and - electric fields

$s_{\pm}^{on}$ = scaler counts in the south (+z) direction taken on resonance for + and - electric fields

$P_{\pm}^{on}$ = normalizing photodiode counts

and similar quantities

$n_{\pm}^{off}$, $s_{\pm}^{off}$, $P_{\pm}^{off}$ for off resonance data