# III. EXPERIMENTAL METHOD

The experimental apparatus is shown schematically in Fig. 6, and photograph of the apparatus is given in Fig. 7. A flashlamp pumped dye laser (1) running at 10-15 pulses per second with energies of 5-10 millijoules per pulse in .5 μsec, and in a bandwidth of a ~ 2 GHz is focused into a 2-cm long ADA doubling crystal (2). The visible light is blocked by a Corning 7-54 absorbing filter (3) that transmits approximately 80% of the 292.7 nm light. The laser light then passes into a quartz Suprasil cell (9) containing the thallium. The electric field is produced by a pair of tantalum electrodes (7) 34 mm long by 12 mm wide and separated by a distance of 6 mm, placed inside the cell and connected to the outside world via tungsten feedthroughs. A stainless steel oven (8) surrounds the cell and is kept at approximately 950°K, corresponding to thallium densities of a few times $10^{14}$ atoms/$cm^3$. A stressed quartz half wave plate (5) is used to rotate the plane of polarization of the laser light with respect to the electric field plates. The fluorescent radiation is collected by an f-1 lens, directed through a 5350 Å interference filter, ~ 2nm fwhm (10), a Polaroid HNCP37 left circular polarizer (11) and finally into an RCA 8850 phototube. A Chronectics 169 fast linear gate (13) triggered by a photodiode and discriminator (4) is used to reject any signal not coincident with the laser pulse. The signal is then integrated, amplified, digitized and stored in scalars. After every thousand pulses, in which data are taken alternately with positive and negative