N2 laser fluorescence Sspectrometer by gating photomultiplier

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A fluorescence spectrometer, with gating PMT (Photo Multiplier Tube) has been designed and constructed for the observation of Time Resolved Spectroscopy. Employed as a source far the fluorescence spectrometer a pulsed N2 lasers with about 5-nanosecond pulse width and 400-kilowatt power. Gating PMT carries out the sampling. In this method some of the dynodes of the PMT are being biased at voltages below normal operating voltage, while the other dynodes are held at their normal voltages. Sampling pulses generated by avalanche transistor are fed into the dynodes of the lower voltage to operate the PMT. A variable delay circuit of the order of nanosecond with respect to the N2 lasers pulse delays the sampling pulses. The output of the PMT is read on an oscilloscope and the lifetime of the fluorescence can be obtained by plotting the output of the PMT vs. the delay time.