

Sim Pack 2:



Single Photon Counting

Version 1.0

© Simulators for Teaching, 2012. All rights reserved.



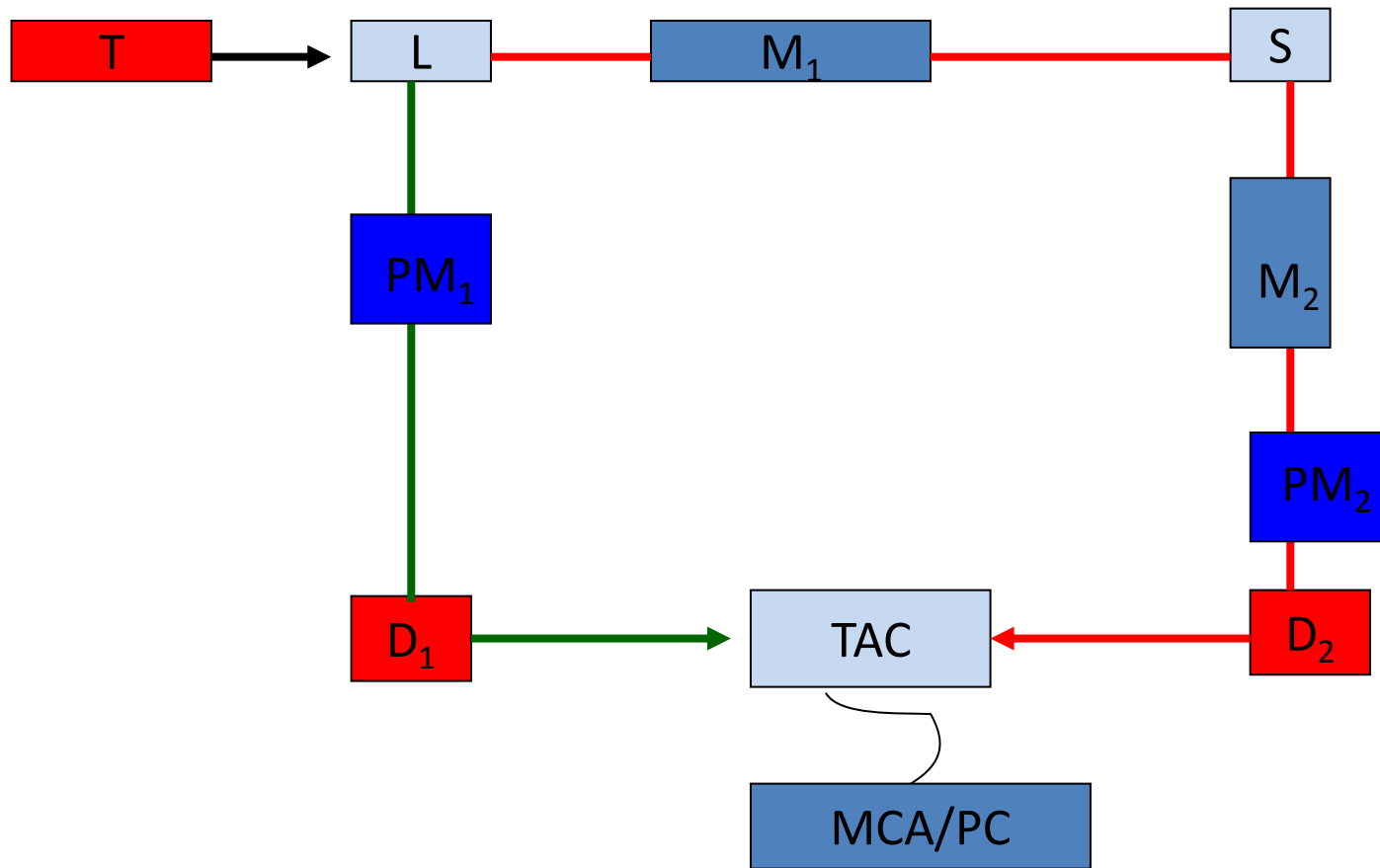
Copyright 2012

www.sim4t.com

Learning Outcomes:

After reading these notes you will learn about the following terms

- **Fluorescence excited state lifetime**
- **Single exponential decay**
- **Single photon counting**
- **Reconvolution**



Schematic layout of a time-correlated single photon counter:

T = trigger control; L= nanosecond source; M= monochromator; s = sample;

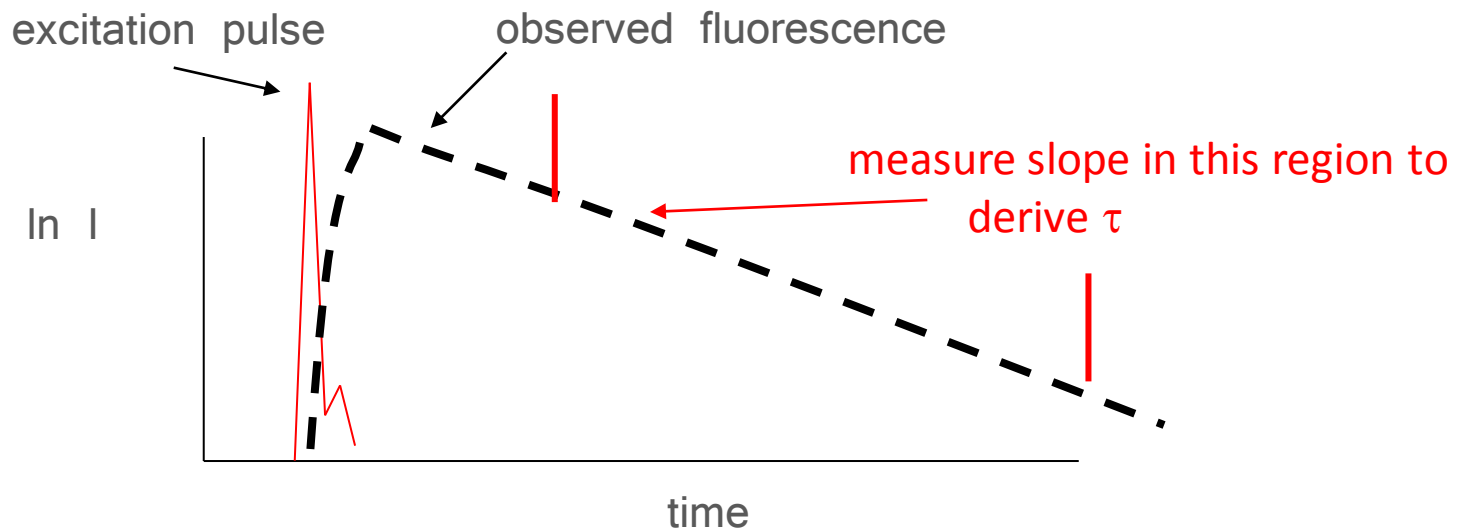
PM = photomultiplier; D = constant fraction discriminator;

TAC = time-to-amplitude converter; MCA = multichannel analyser (PC)

Difference between “start” (green) and “stop” (red) signal classed as an “event”
& is stored in the MCA

For long-lived species ($\tau \gg$ width of excitation pulse) showing first order kinetics, τ would be obtained from the slope of $\log F$ vs. t , analysing the decay data in a region “free” from the perturbing influences of the excitation pulse.

Lifetime Determination





This document is protected under copyright law. Unauthorised reproduction is prohibited. This applies to all forms of the document including, but not limited to, printed and electronic versions.

© Simulators for Teaching, 2012. All rights reserved



Copyright 2012

www.sim4t.com