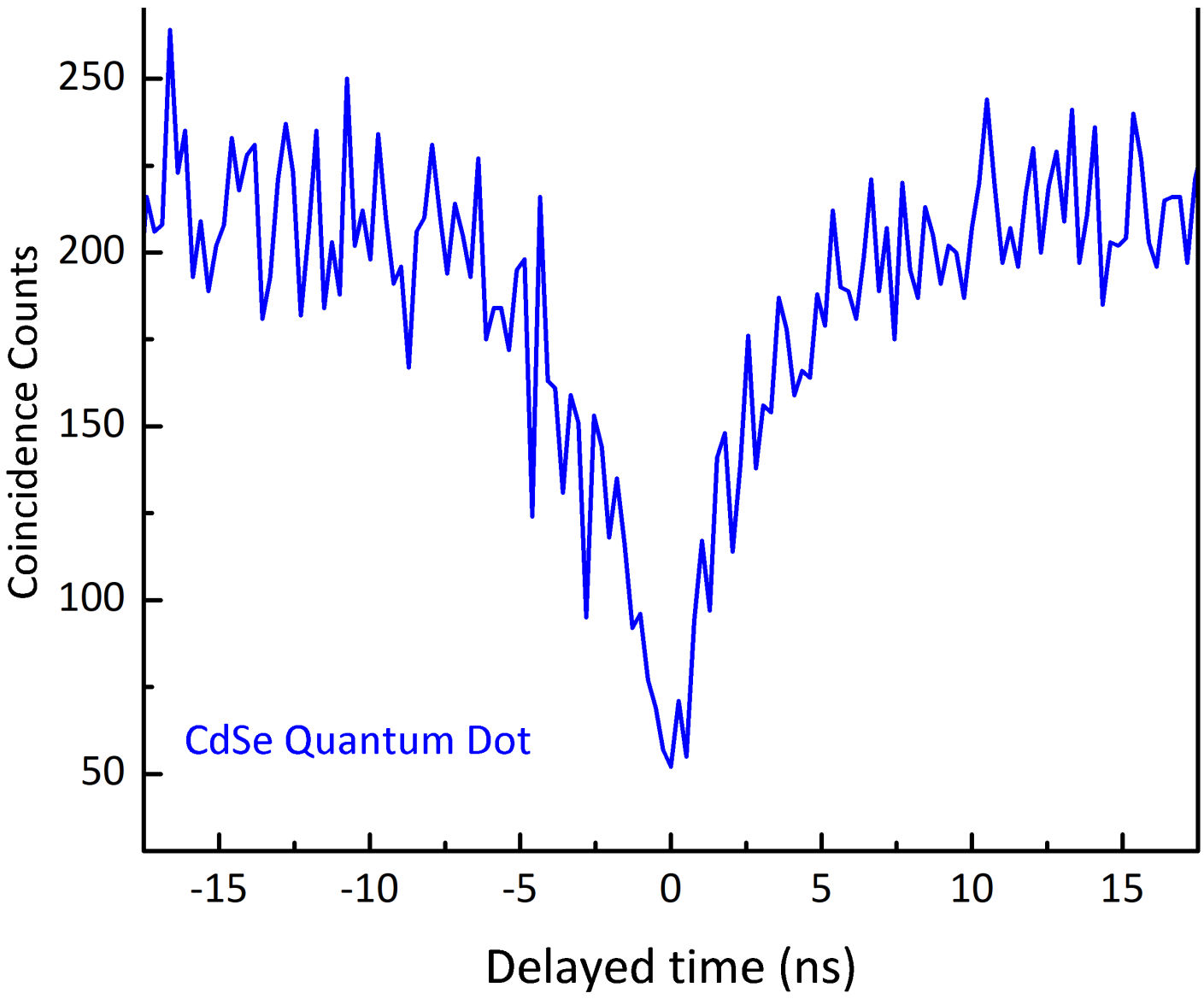
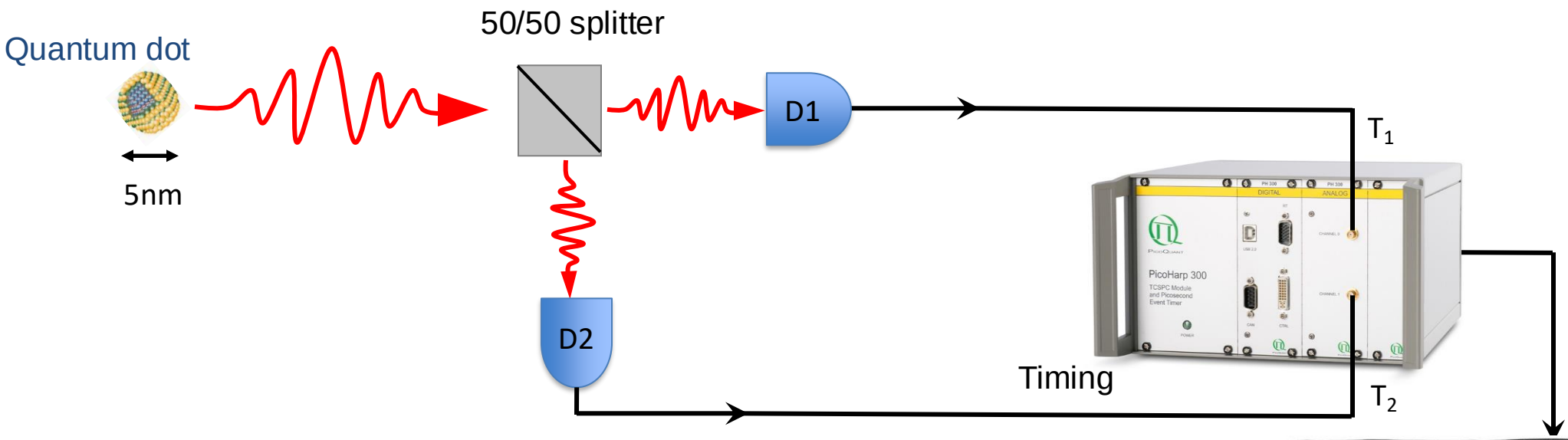
First *Single Photon* Generated and Detected at the UofM



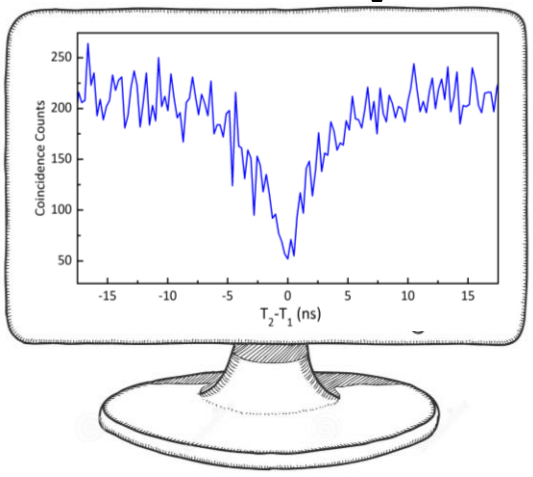
Dr. Thang B. Hoang

How it works?



1. A single quantum dot (an artificial atom) emits a ONE photon at a time
2. The emitted photon is randomly sent to either detector D1 or D2 at a time, not both
3. A timing module will detect arrival times T_1 and T_2 at detectors D1 and D2
4. A computer software generates a histogram showing the coincident counts between two detectors vs time difference T_2-T_1.

Ideally, at time difference T_2-T_1 = 0 the coincidence count should be 0 because a photon cannot arrive at two detectors at the same time → there should be a dip at T_2-T_1 = 0.



Such a photon can be used as a quantum bit (qbit) for quantum computing.