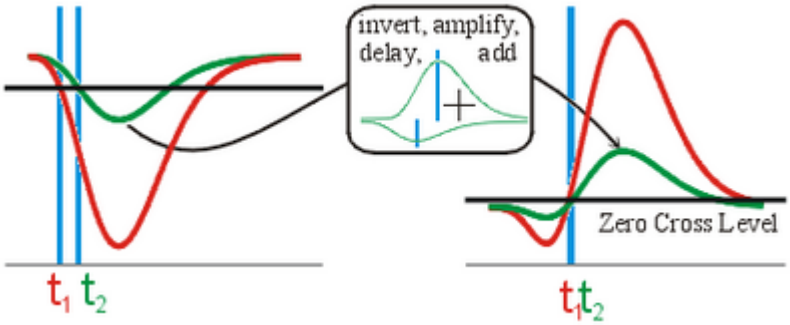
CFD

CFD stands for **C**onstant **F**raction **D**iscriminator.



Comparison of threshold activation (left) to CFD activation (right)

The CFD is used to extract precise timing information from electrical detector pulses that may vary in amplitude. Thereby the overall system IRF can be narrowed and some of the random background signal can be suppressed. This cannot not be achieved with a simple threshold detector (comparator). Constant fraction discrimination is very important, especially in the case of PMTs, because their pulse amplitudes vary significantly.

A CFD compares the original detector signal with an amplified and delayed version of itself. The signal derived from this comparison changes polarity exactly when a constant fraction of the detector pulse height is reached. The zero crossing point of this signal is therefore suitable to derive a timing signal independent from the amplitude of the input pulse. This is done by comparing this signal to a zero cross level. This level should be adjusted to remove events that originate from signal noise. CFDs furthermore permit to set a discriminator threshold for the pulse amplitude.

Copyright of this document belongs to PicoQuant GmbH. No parts of it may be reproduced, translated or transferred to third parties without written permission of PicoQuant GmbH. All information given here is reliable to our best knowledge. However, no responsibility is assumed for possible inaccuraciesor omissions. Specifi cations and external appearances are subject to change without notice.

PicoQuant GmbH
Rudower Chaussee 29 (IGZ)
12489 Berlin
Germany

P +49-(0)30-1208820-89
F +49-(0)30-1208820-90
info@picoquant.com
www.picoquant.com