The random variables of times of flight of photons can be defined by using its cumulative distributions. The new measure of the distance between two cumulative distributions of these random variables in the range $t \in (t_b, t_b + \Delta t)$ proposed in this work is based on the similarity criterion [10] and is defined as:

$$err = \sum_{j=1}^{K} \sum_{i=1}^{j} \int_{t_b+(i-1)\Delta t/j}^{t_b+i\Delta t/j} \left(\phi(s) - a_{ij}s - b_{ij}\right)^2 ds \quad (1)$$

The function in the above formula is defined as in the Distribution Function Method [9] i.e.:

$$\forall t \in (t_b, t_b + \Delta t) \quad \phi(t) = F_1^{-1}(F_2(t)) \quad (2)$$

The parameters a_{ij}, b_{ij} are the coefficients of linear functions fitted to the ϕ function in the intervals corresponding to the limits of intergration i.e. $t \in (t_b + (i-1)\Delta t/j, t_b + i\Delta t/j)$. This approach allows the comparison of the TOF of photons in a way similar to the statistical goodness of fit. For further simplicity, the proposed method of estimation based on the error function (1) will be named DFM. The characteristics of the functions ϕ obtained from the comparison of the TOF from the reference structure (defined by absorption coefficient $\mu_a = 0.1cm^{-1}$ and scattering coefficient $\mu_s = 13cm^{-1}$) and TOFs generated for different values of absorption and scattering coefficients are shown in fig. 2 and 3.