FCS multi-component free diffusion fitting model.

Assuming a 3D Gaussian detection volume, the general multi-component free diffusion fitting model is described by

$$G(\tau)=1+\frac{1}{\langle N\rangle}\cdot\frac{1-T+Te^{-\frac{\tau}{\tau_T}}}{1-T}\cdot\left[\sum_{i=1}^{m}\frac{\Phi_i}{\left(1+\frac{\tau}{\tau_{D_i}}\right)\sqrt{1+\left(\frac{\omega_{xy}}{\omega_z}\right)^2\cdot\frac{\tau}{\tau_{D_i}}}}\right]$$

where $\langle N\rangle$ is the mean number of particles in the detection volume, T and τ_T are the triplet fraction and triplet lifetime, respectively (both assumed equal for all components), Φ_i is the fractional intensity of the ith species, m is the total number of species in the sample, and τ_{D_i} is the characteristic diffusion time of the ith species through the detection volume. For m=1, Eq. (1) is reduced to the one-component free diffusion model. ω_{xy} and ω_z are the axial and the radial waist of the Gaussian detection volume, respectively, defined as the distances at which the intensity drops to $1/e^2$ of the maximum intensity.