

Enhanced DNA Detection Using a Multiple Pulse Pumping Scheme with Time-Gating (MPPTG)

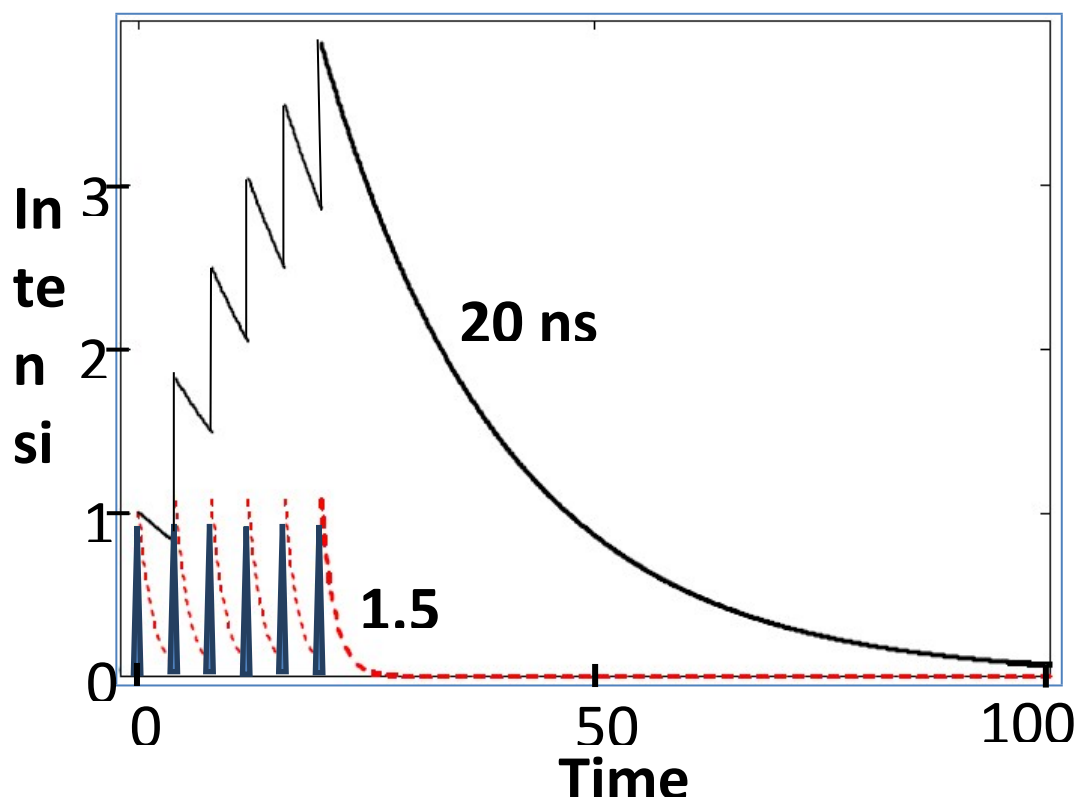
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Figure S1: Concept of multiple pulse excitation and effect on intensity of probes with different lifetimes



SUPPLEMENTARY INFORMATION

Tables :S1 Shows the amplitude weighted analysis of fluorescence intensity decays collected for 20nM DNA concentration for 1,2,3 and 4 μ M EtBr concentrations.

50 ps delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	0.52	99.48	13.46	1.55	2.07	1.61	0.85
2 pulse	0.64	99.36	17.46	1.54	2.62	1.65	0.81
3 pulse	0.95	99.05	16.57	1.53	2.95	1.67	0.97
4 pulse	1.08	98.92	19.95	1.54	3.81	1.74	0.94

0.5 ns delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	0.54	99.46	13.40	1.55	2.08	1.61	0.85
2 pulse	0.66	99.34	17.49	1.54	2.66	1.65	0.81
3 pulse	0.96	99.04	16.60	1.53	2.96	1.67	0.97
4 pulse	1.13	98.87	19.97	1.54	3.91	1.75	0.94

1 ns delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	0.65	99.35	13.94	1.56	2.24	1.64	0.84
2 pulse	0.89	99.11	17.65	1.55	3.04	1.70	0.80
3 pulse	1.28	98.72	16.74	1.53	3.42	1.73	0.97
4 pulse	1.51	98.49	20.05	1.54	4.61	1.82	0.94

3 ns delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	1.98	98.02	14.11	1.56	3.50	1.81	0.84
2 pulse	2.74	97.26	18.45	1.58	5.75	2.04	0.80
3 pulse	3.89	93.11	17.88	1.58	6.70	2.21	0.97
4 pulse	4.71	95.29	20.86	1.57	9.21	2.48	0.93

SUPPLEMENTARY INFORMATION

6 ns delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	9.08	90.92	15.49	1.64	8.37	2.90	0.83
2 pulse	13.76	86.24	19.21	1.68	13.00	4.10	0.80
3 pulse	18.05	81.95	18.93	1.67	13.98	4.80	0.96
4 pulse	21.42	78.39	21.42	1.58	17.21	5.87	0.94

8 ns delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	28.35	76.15	14.90	1.55	11.57	4.74	0.83
2 pulse	30.85	69.15	18.50	1.46	15.93	6.72	0.78
3 pulse	40.32	59.68	19.31	1.81	17.18	8.87	0.96
4 pulse	47.84	52.16	21.28	1.59	19.80	11.01	0.94

10 ns delay calculation

Sample	α_1 (%)	α_2 (%)	τ_1 (ns)	τ_2 (ns)	Avg τ_{int} (ns)	Avg τ_{amp} (ns)	χ^2
1 pulse	49.41	50.59	14.56	1.33	13.43	7.86	0.83
2 pulse	62.49	37.51	18.74	1.70	17.86	12.35	0.77
3 pulse	58.07	41.93	17.95	0.86	17.38	10.79	0.96
4 pulse	68.54	31.46	21.19	1.23	20.67	14.91	0.94