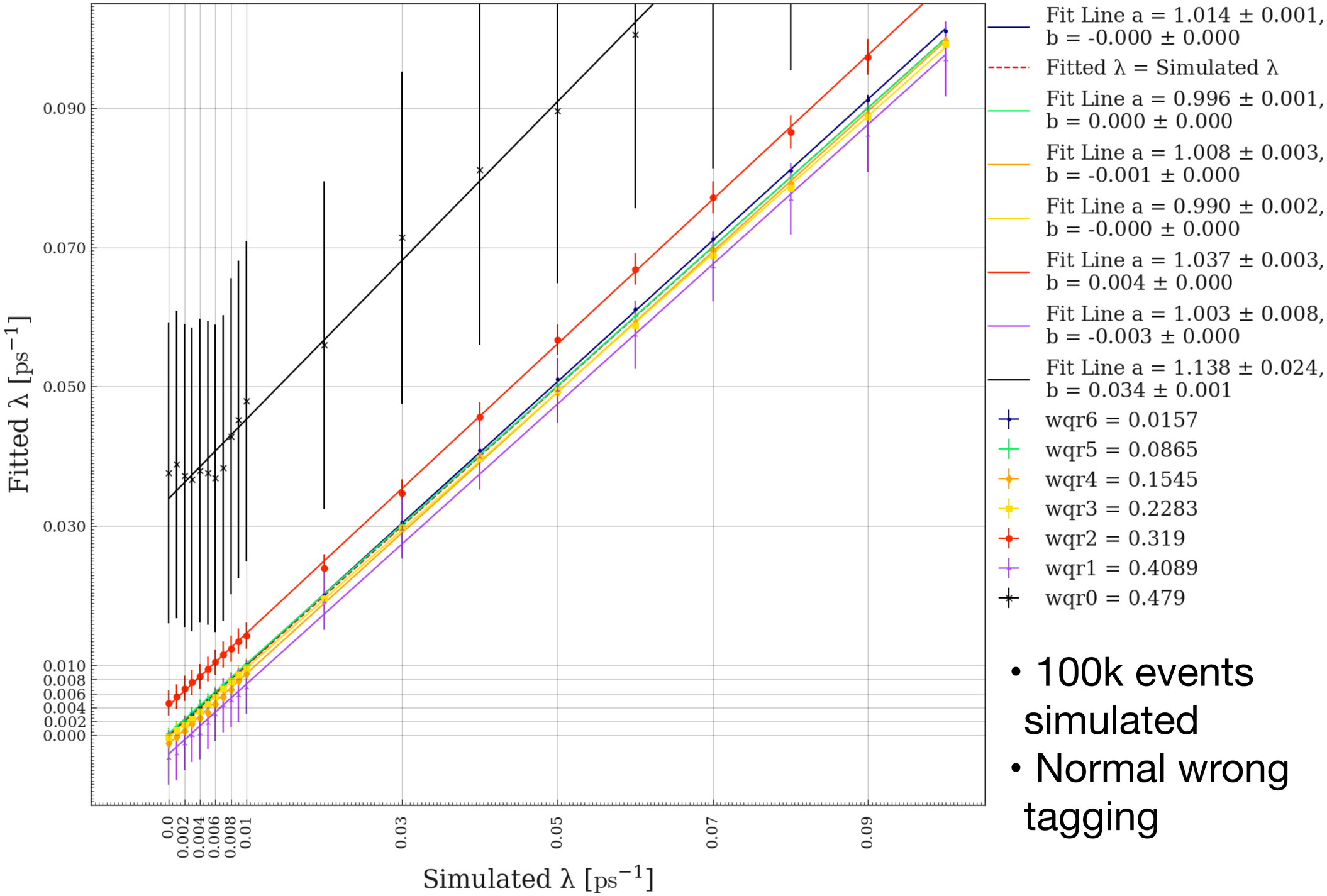
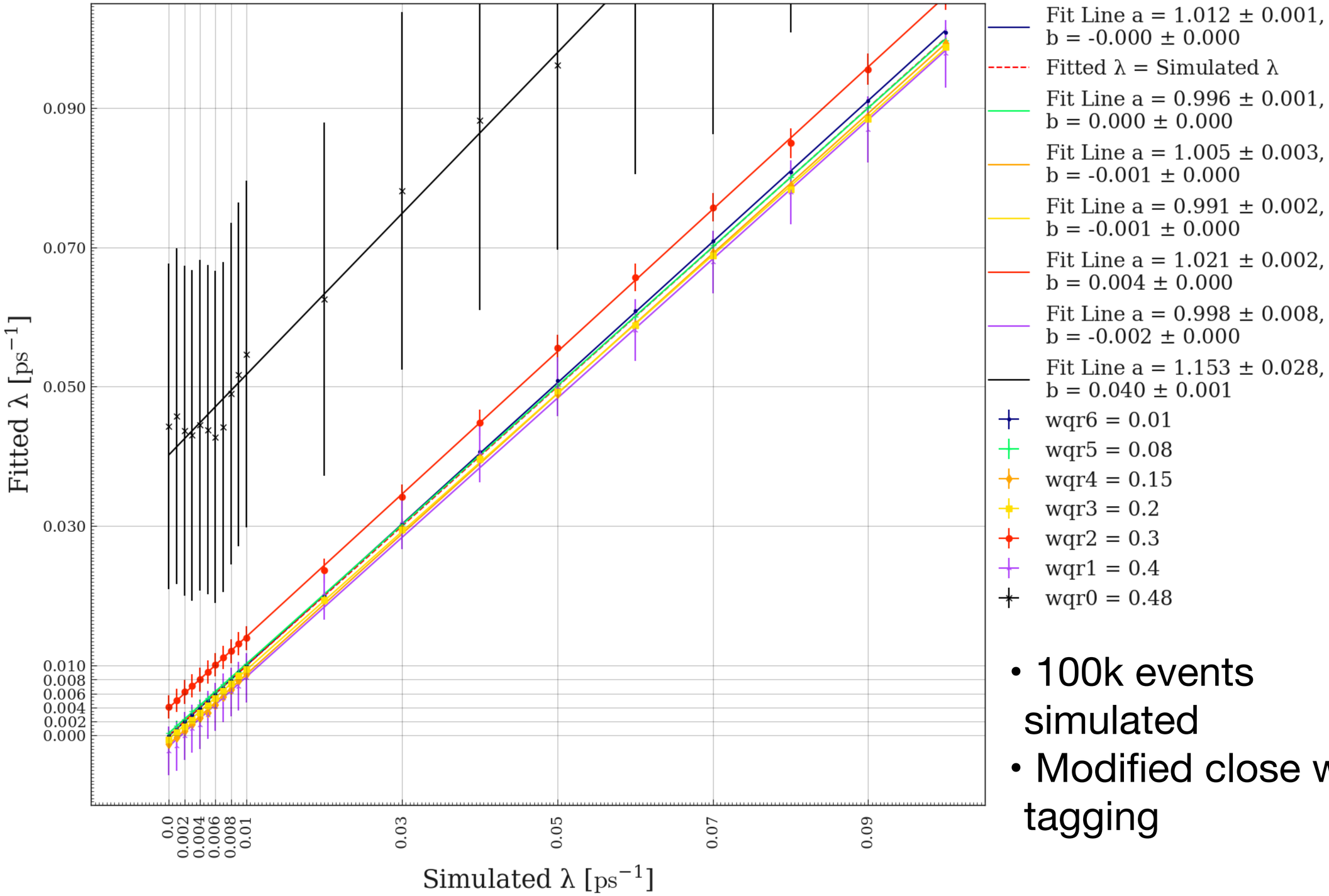
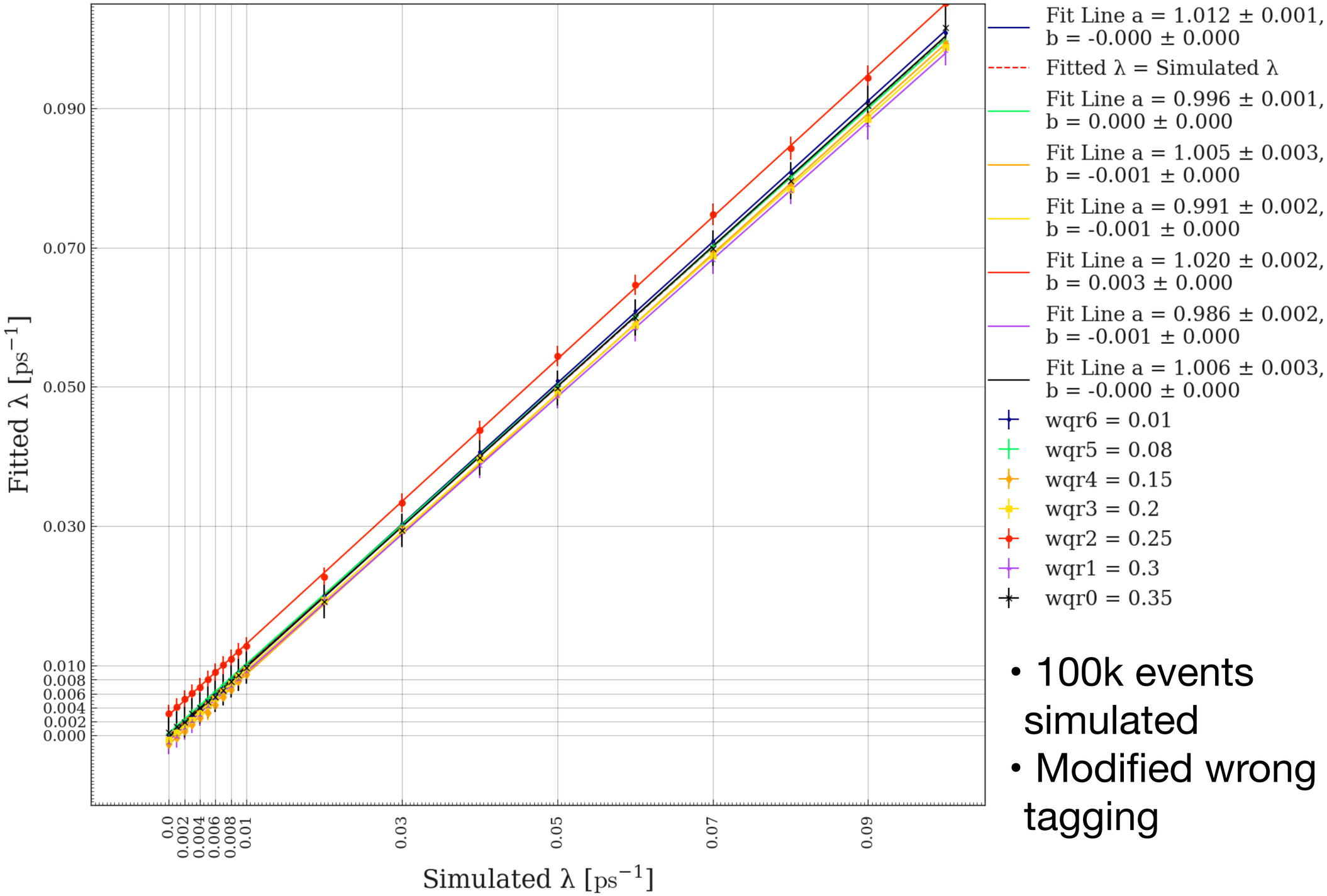


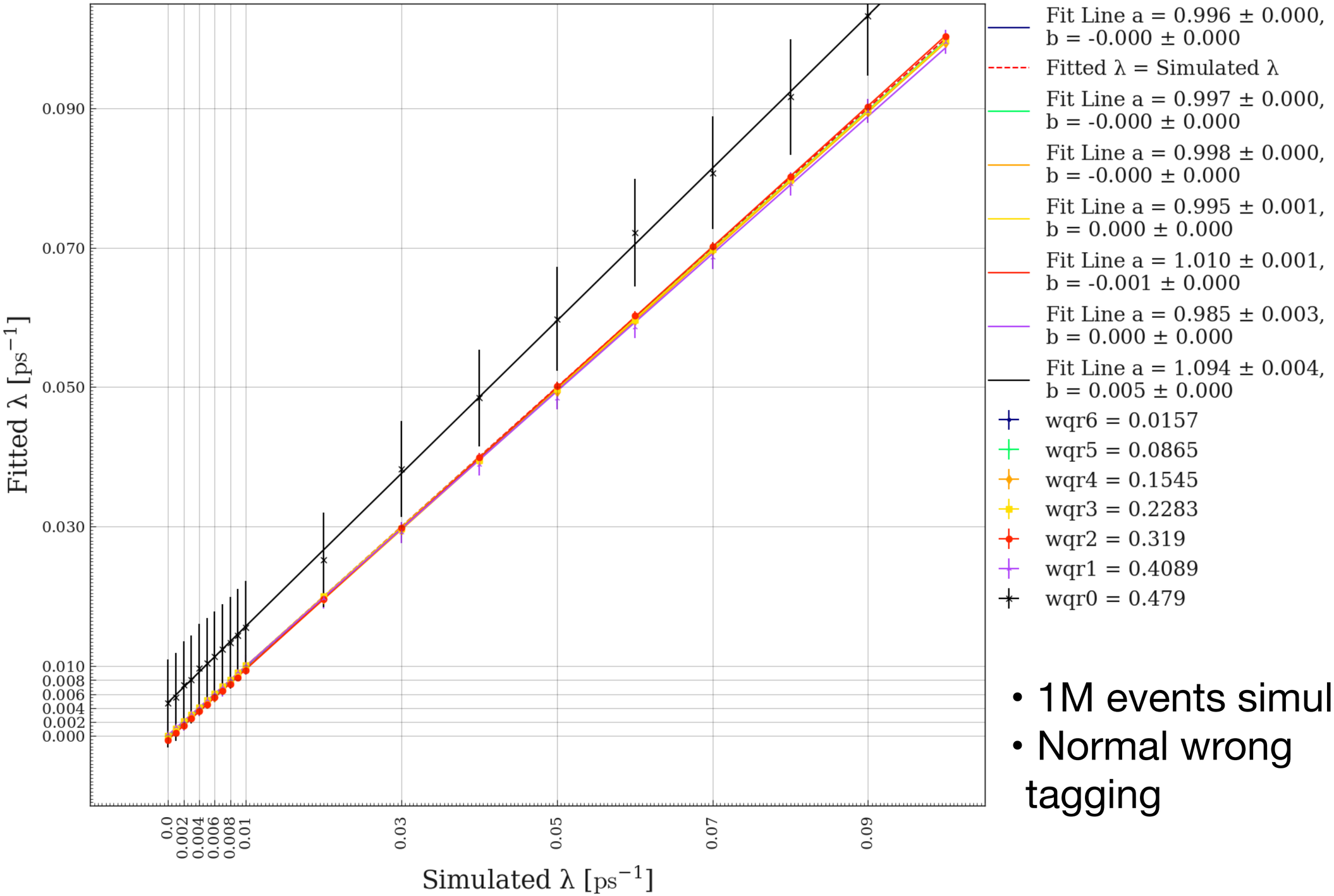
- 100k events simulated
- Normal wrong tagging



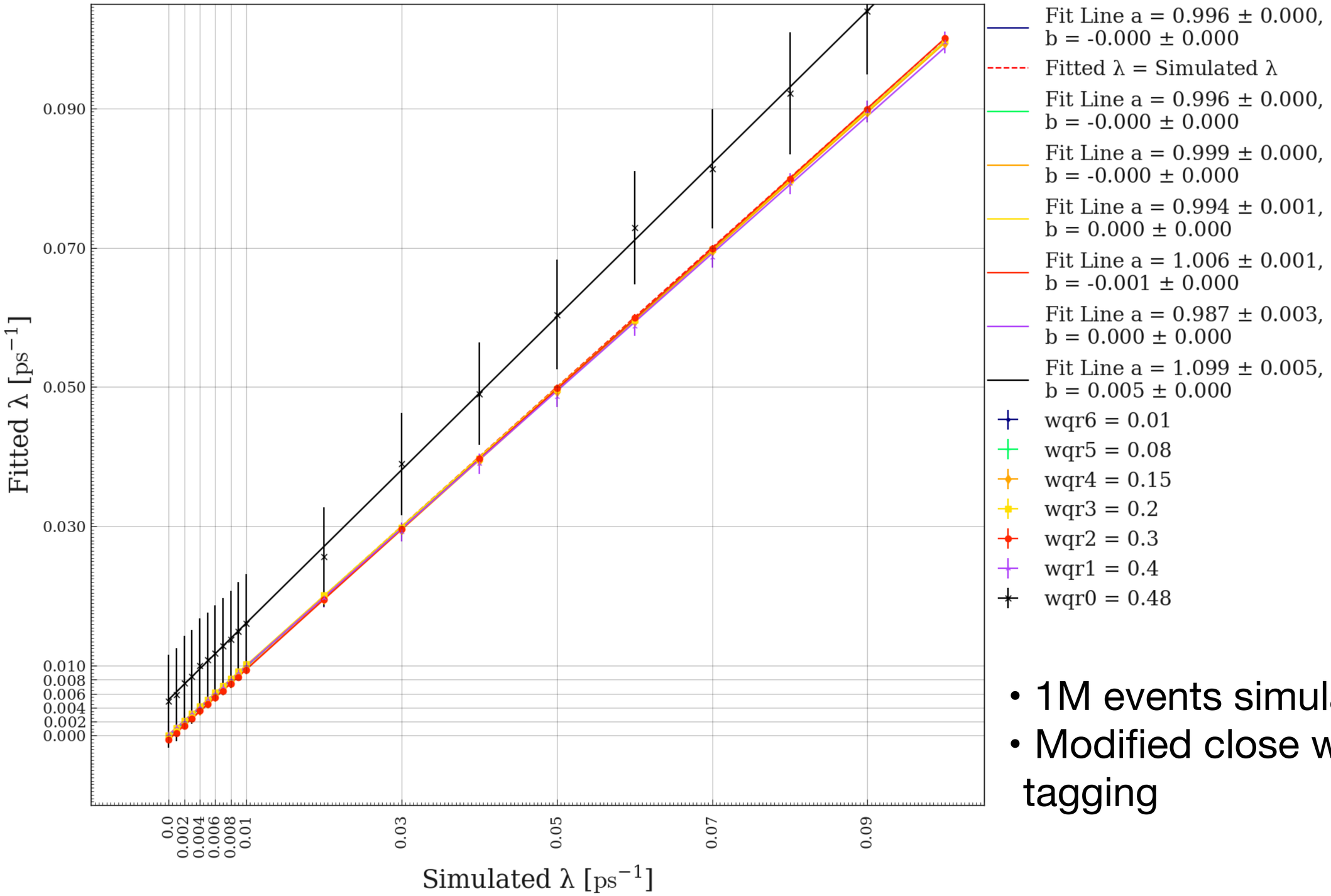
- 100k events simulated
- Modified close wrong tagging



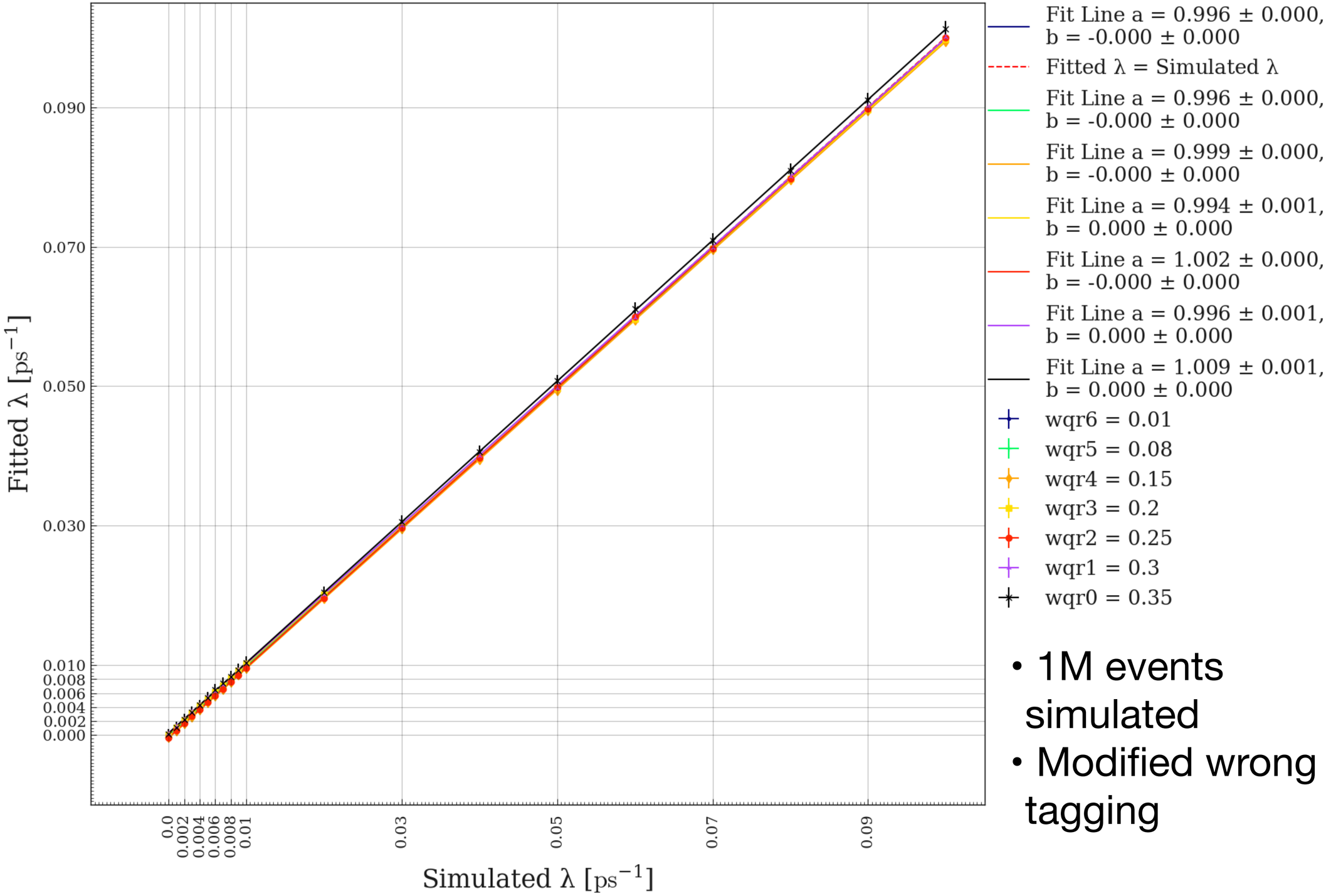
- 100k events simulated
- Modified wrong tagging



- 1M events simulated
- Normal wrong tagging



- 1M events simulated
- Modified close wrong tagging



- 1M events simulated
- Modified wrong tagging

100k events Gen $\lambda = 0.002$ ps^{-1}		Wrong tagging bins (fraction of data)						
		w_{qr0} (15.5%)	w_{qr1} (15.8%)	w_{qr2} (16.5%)	w_{qr3} (13.4%)	w_{qr4} (11.6%)	w_{qr5} (11.0%)	w_{qr6} (16.2%)
Wrong tag ratio	Normal	0.0372 ± 0.0217	-0.0007 ± 0.0038	0.0069 ± 0.0018	0.0016 ± 0.0013	0.0007 ± 0.0011	0.0022 ± 0.0007	0.0021 ± 0.0003
	All 5%	0.0020 ± 0.0005	0.0021 ± 0.0005	0.0029 ± 0.0005	0.0020 ± 0.0005	0.0015 ± 0.0005	0.0018 ± 0.0005	0.0018 ± 0.0005
	All 25%	0.0028 ± 0.0013	0.0023 ± 0.0013	0.0052 ± 0.0013	0.0024 ± 0.0015	-0.0014 ± 0.0017	0.0019 ± 0.0015	0.0004 ± 0.0014
	All 30%	0.0018 ± 0.0016	0.0010 ± 0.0016	0.0062 ± 0.0017	0.0018 ± 0.0020	-0.0032 ± 0.0023	0.0002 ± 0.0020	-0.0002 ± 0.0019
	All 32%	0.0003 ± 0.0018	0.0004 ± 0.0018	0.0069 ± 0.0018	0.0015 ± 0.0022	-0.0044 ± 0.0026	0.0023 ± 0.0023	0.0002 ± 0.0021
	All 33%	0.0011 ± 0.0019	-0.0001 ± 0.0019	0.0075 ± 0.0019	0.0018 ± 0.0022	-0.0055 ± 0.0028	0.0017 ± 0.0025	0.0000 ± 0.0022
	All 40%	0.0030 ± 0.0034	-0.0001 ± 0.0035	0.0129 ± 0.0031	0.0016 ± 0.0038	-0.0116 ± 0.0049	0.0017 ± 0.0043	0.0012 ± 0.0036

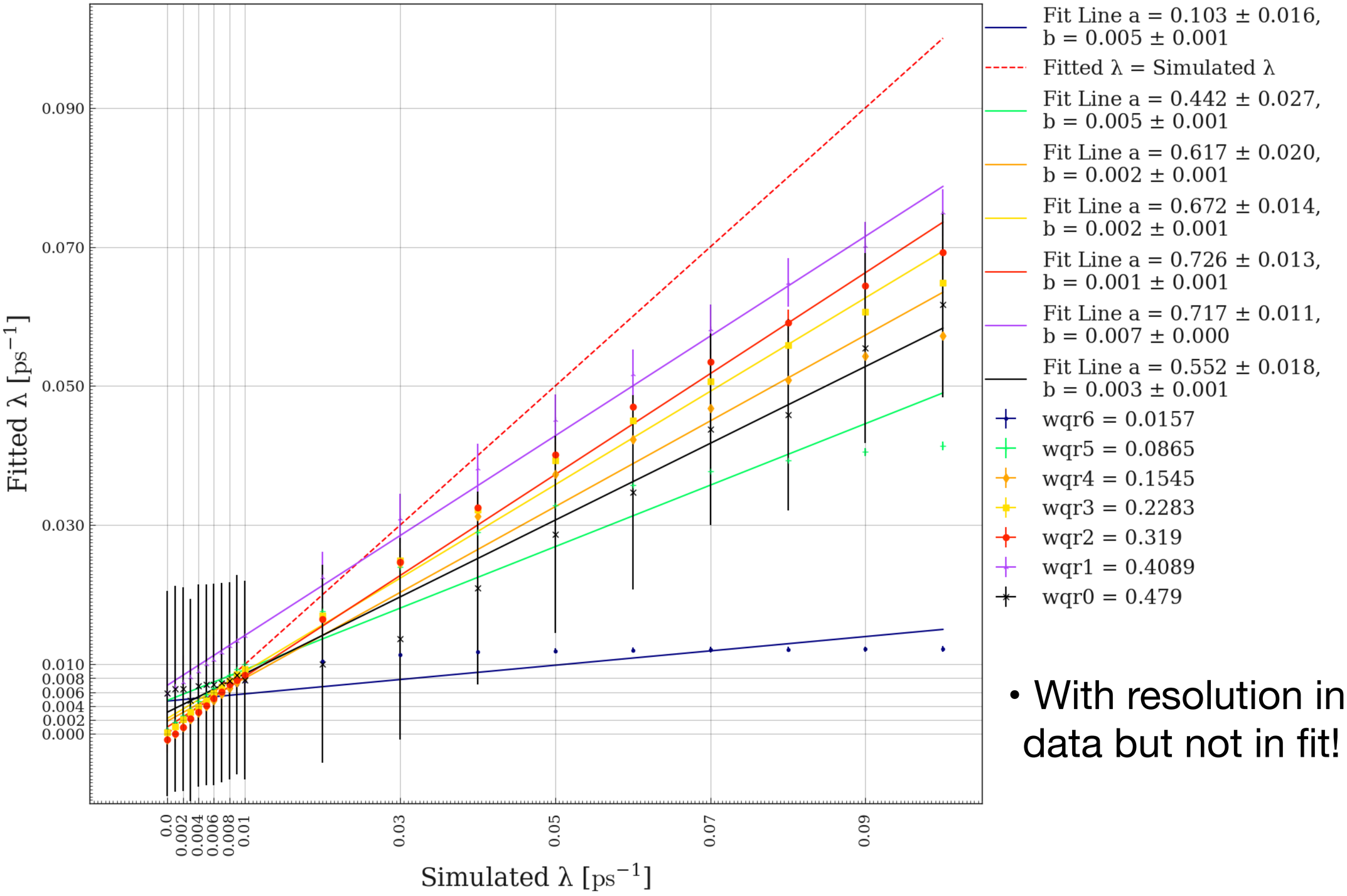
- Small wrong tag ratios observe good fit precision
- Lager wrong tag ratios observe larger fit bias
- Larger wrong tag ratio, bias can switch from positive to negative bias → quantization effect in choosing how many events go into each wrong tag bin?

100k events Gen $\lambda = 0.002$ ps^{-1}		Wrong tagging bins (fraction of data)						
		w_{qr0} ($\sim$ 14.3%)	w_{qr1} ($\sim$ 14.3%)	w_{qr2} ($\sim$ 14.3%)	w_{qr3} ($\sim$ 14.3%)	w_{qr4} ($\sim$ 14.3%)	w_{qr5} ($\sim$ 14.3%)	w_{qr6} ($\sim$ 14.3%)
Wrong tag ratio	Normal	0.0003 ± 0.0204	0.0072 ± 0.0043	0.0014 ± 0.0019	0.0011 ± 0.0014	0.0024 ± 0.0009	0.0017 ± 0.0007	0.0019 ± 0.0003
	All 5%	0.0014 ± 0.0005	0.0014 ± 0.0005	0.0020 ± 0.0005	0.0023 ± 0.0005	0.0021 ± 0.0004	0.0019 ± 0.0005	0.0023 ± 0.0005
	All 25%	0.0020 ± 0.0013	0.0033 ± 0.0013	0.0024 ± 0.0012	0.0012 ± 0.0015	0.0043 ± 0.0012	0.0012 ± 0.0014	0.0038 ± 0.0014
	All 30%	0.0030 ± 0.0016	0.0026 ± 0.0018	0.0019 ± 0.0017	0.0018 ± 0.0020	0.0041 ± 0.0017	0.0013 ± 0.0019	0.0044 ± 0.0017
	All 32%	0.0030 ± 0.0018	0.0039 ± 0.0020	0.0016 ± 0.0019	0.0010 ± 0.0023	0.0050 ± 0.0019	0.0012 ± 0.0020	0.0049 ± 0.0019
	All 33%	0.0029 ± 0.0019	0.0041 ± 0.0020	0.0021 ± 0.0020	0.0008 ± 0.0024	0.0050 ± 0.0020	0.0010 ± 0.0021	0.0052 ± 0.0020
	All 40%	0.0029 ± 0.0038	0.0058 ± 0.0039	0.0032 ± 0.0035	0.0019 ± 0.0046	0.0119 ± 0.0035	0.0013 ± 0.0039	0.0075 ± 0.0037

1M events Gen $\lambda = 0.002$ ps^{-1}		Wrong tagging bins (fraction of data)						
		w_{qr0} (15.5%)	w_{qr1} (15.8%)	w_{qr2} (16.5%)	w_{qr3} (13.4%)	w_{qr4} (11.6%)	w_{qr5} (11.0%)	w_{qr6} (16.2%)
Wrong tag ratio	Normal	0.0073 ± 0.0063	0.0021 ± 0.0014	0.0015 ± 0.0006	0.0021 ± 0.0004	0.0016 ± 0.0003	0.002 ± 0.0002	0.0019 ± 0.0001
	All 5%	0.0021 ± 0.0002	0.0021 ± 0.0001	0.0021 ± 0.0002	0.0019 ± 0.0002	0.0016 ± 0.0002	0.0018 ± 0.0002	0.0018 ± 0.0002
	All 25%	0.0025 ± 0.0004	0.0018 ± 0.0004	0.0017 ± 0.0004	0.0019 ± 0.0005	0.0014 ± 0.0005	0.0015 ± 0.0005	0.0017 ± 0.0004
	All 30%	0.0023 ± 0.0006	0.0022 ± 0.0006	0.0014 ± 0.0005	0.0021 ± 0.0006	0.0015 ± 0.0007	0.0013 ± 0.0007	0.0020 ± 0.0006
	All 32%	0.0022 ± 0.0006	0.0019 ± 0.0006	0.0014 ± 0.0006	0.0023 ± 0.0007	0.0014 ± 0.0008	0.0011 ± 0.0008	0.0023 ± 0.0006
	All 33%	0.0022 ± 0.0007	0.0019 ± 0.0007	0.0012 ± 0.0006	0.0023 ± 0.0007	0.0016 ± 0.0008	0.0013 ± 0.0008	0.0023 ± 0.0007
	All 40%	0.0030 ± 0.0012	0.0021 ± 0.0013	0.0014 ± 0.0010	0.0032 ± 0.0013	0.0031 ± 0.0015	0.0016 ± 0.0013	0.0032 ± 0.0012

1M events Gen $\lambda = 0.002$ ps^{-1}		Wrong tagging bins (fraction of data)						
		w_{qr0} ($\sim 14.3\%$)	w_{qr1} ($\sim 14.3\%$)	w_{qr2} ($\sim 14.3\%$)	w_{qr3} ($\sim 14.3\%$)	w_{qr4} ($\sim 14.3\%$)	w_{qr5} ($\sim 14.3\%$)	w_{qr6} ($\sim 14.3\%$)
Wrong tag ratio	Normal	0.0022 ± 0.0064	0.0035 ± 0.0014	0.0023 ± 0.0007	0.0021 ± 0.0004	0.0019 ± 0.0003	0.0020 ± 0.0002	0.0019 ± 0.0001
	All 5%	0.0020 ± 0.0002	0.0022 ± 0.0002	0.0022 ± 0.0002	0.0021 ± 0.0002	0.0018 ± 0.0002	0.0020 ± 0.0002	0.0019 ± 0.0002
	All 25%	0.0019 ± 0.0005	0.0020 ± 0.0004	0.0025 ± 0.0005	0.0020 ± 0.0005	0.0017 ± 0.0005	0.0016 ± 0.0004	0.0020 ± 0.0005
	All 30%	0.0017 ± 0.0007	0.0024 ± 0.0005	0.0023 ± 0.0006	0.0022 ± 0.0006	0.0021 ± 0.0006	0.0013 ± 0.0005	0.0022 ± 0.0006
	All 32%	0.0020 ± 0.0007	0.0026 ± 0.0006	0.0023 ± 0.0007	0.0018 ± 0.0006	0.0026 ± 0.0007	0.0015 ± 0.0006	0.0023 ± 0.0007
	All 33%	0.0021 ± 0.0008	0.0027 ± 0.0007	0.0024 ± 0.0007	0.0016 ± 0.0007	0.0027 ± 0.0008	0.0016 ± 0.0007	0.0022 ± 0.0008
	All 40%	0.0018 ± 0.0013	0.0033 ± 0.0012	0.0023 ± 0.0012	0.0013 ± 0.0012	0.0035 ± 0.0013	0.0009 ± 0.0011	0.0025 ± 0.0013

- With more data we observe fit values in same fraction of data agree with each other within its errors
- Bias seems to have statistic nature!



- With resolution in data but not in fit!