IPstrong v1.1.00 data sets, update 10/11/2020

- More accurate HICS for high ξ, simulated rate=99.9% of true rate
- 1000 bxs "provisional" JETI40, e-laser, 16.5 GeV, w0=3,8 μm
- "Ideal" datasets (No crossing angle, no emittance, no energy spread)
- long pulse: ./phaseII/ideal/e_laser_17.5GeV_w0_8000nm_tau_200fs/

Aug-Oct 2020 Data Runs, bunch/pulse crossings completed

Experiment Config	$w_0 = 3\mu$m	3.5μm	4.0μm	4.5μm	5.0μm	6.5μm	8.0μm	10.0μm	13.0μm	15.0μm	20.0μm	50.0μm	100.0μm
peak SQED ξ	5.12	4.44	3.88	3.45	3.1	2.39	1.94	1.553	1.195	1.04	0.78	0.31	0.15
peak SQED χ (16.5 GeV)	0.9	0.79	0.69	0.61	0.55	0.42	0.34	0.275	0.212	0.183	0.138	0.055	0.028
JETI40 e-laser 16.5 GeV	10000	6000	5994	6000	6000		10000	1000	1000	1000	500	5000	500
JETI40 e-laser 16.5 GeV (prov)	1000						1000						
JETI40 e-laser 17.5 GeV	1000	1000	1000	1000	1000		1000						
JETI40 g-laser (coarse) 16.5 GeV	1000	1000	999	1000	1000		1000						
JETI40 g-laser 16.5 GeV	5000	2000	2000	2000	2000	2000	2000						
JETI40 g-laser 17.5 GeV													
JETI40 ics-laser 16.5 GeV													
JETI40 ics-laser 17.5 GeV													
JETI40 misalignments													
	pulse shape	$w_0 = 3.0\mu$m	$w_0 = 4.0\mu$m	$w_0 = 5.0\mu$m	$w_0 = 6.0\mu$m	$w_0 = 7.0\mu$m	$w_0 = 8.0\mu$m	$w_0 = 9.0\mu$m	$w_0 = 10.0\mu$m	$w_0 = 11.0\mu$m	$w_0 = 12.0\mu$m		
peak SQED ξ	gauss	16.7	12.53	10.03	8.35	7.16	6.27	5.57	5.01	4.56	4.18		
peak SQED χ (16.5 GeV)	gauss	2.96	2.22	1.78	1.48	1.27	1.11	0.99	0.89	0.81	0.74		
phaseII e-laser 16.5 GeV	gauss	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000		
phaseII e-laser 17.5 GeV	gauss	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000		
phaseII g-laser 16.5 GeV	gauss	2000	1000	1000	1000	1000	1000	2000	2000	2000	2000		
phaseII g-laser 16.5 GeV	flatTR						2285	2000	2000	2000	2000		
phaseII g-laser 17.5 GeV													
phaseII ics-laser 16.5 GeV							1000						
phaseII ics-laser 17.5 GeV													
phaseII misalignments													

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PhaseII trident pair production with long pulse

- Putting the laser pulse energy into a longer pulse is technically straightforward
- Investigate phaseII e-laser, pulse parameter space for number of photons and number of positrons energy per initial electron
- Only one bx, 100 initial macro electrons (preliminary study)

HICS photon statistics for different experimental conditions

Experiment Config	pulse shape	$w_0(\mu\text{m})$	τ(fs)	$N_\gamma/e-$	N_{e+}	χ	ξ (peak)
phaseII e-laser 16.5 GeV 10J	gauss	10	40	3.0	3000	0.77	4.34
phaseII e-laser 16.5 GeV 10J	gauss	10	60	3.3	2800	0.63	3.54
phaseII e-laser 16.5 GeV 10J	gauss	10	120	4.1	47	0.44	2.5
phaseII e-laser 16.5 GeV 10J	gauss	8	200	4.8	9	0.43	2.43
phaseII e-laser 16.5 GeV 10J	gauss	6	250	5.8	25	0.51	2.9
phaseII e-laser 16.5 GeV 10J	gauss	6	300	5.0	59	0.47	2.64
phaseII e-laser 16.5 GeV 10J	gauss	5	250	5.2	101	0.62	3.5