## HICS rate summed over n laser photons





- Previously HICS rate summed up to n=10
- $\circ~$  (coded several years ago for another project with  $\xi=1)$
- For accuracy, sum to  $n = 10 + \xi^3$
- Total HICS rate,  $\sim$ 100% larger at  $\xi = 5$
- Differential rate: high energy photon tail previously missing
- Consequence: expect substantially more trident pairs
- Note: Observable Compton edges still in the same place
- This "fix" is in all the new "provisional" data sets

## IPstrong v1.1.00 data sets, update 24/11/2020

- o Mirroring all data with "provisional" sets, containing HICS fix
- o HICS rate will be larger, there will be more trident positrons

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 (	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 $\chi$ (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	1000	1000	1000	1000	1000						
JETI40 e-laser 17.5 GeV	1000	1000	1000	1000	1000		1000						
JETI40 e-laser 17.5 GeV (prov)	1000	1000	1000	1000	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	$m_2 = 3.0 \mu m$	$m = 4.0 \mu m$	$w_0 = 5.0 \mu m$	$w_0 = 6.0 \mu m$	$m_0 = 7.0 \mu m$	$m = 8.0 \mu m$	$m_0 = 9.0 \mu m$	$m_{\rm H} = 10.0 \mu m$	$m = 11.0 \mu m$	$m = 12.0 \mu m$	$w_2 = 16.0 \mu m$	$w_0 = 20.0 \mu m$
	heree errebe		=0		· · · · · ·		=0 0.01		=0 10100000			10 1010/111	-0 -0.0/111
peak SQED ¿	gauss	16.7	12.53	10.03	8.35	7.16	6.27	5.57	5.01	4.56	4.18	3.133	2.506
peak SQED ξ peak SQED χ (16.5 GeV)	gauss gauss	16.7 2.96	12.53	10.03	8.35	7.16	6.27	5.57	5.01	4.56	4.18	3.133	2.506
peak SQED ξ peak SQED χ (16.5 GeV) phasell e-laser 16.5 GeV	gauss gauss gauss	16.7 2.96 1000	12.53 2.22 1000	10.03 1.78 1000	8.35 1.48 1000	7.16 1.27 1000	6.27 1.11 1000	5.57 0.99 1000	5.01 0.89 1000	4.56 0.81 1000	4.18 0.74 1000	3.133	2.506
peak SQED ξ peak SQED χ (16.5 GeV) phasell e-laser 16.5 GeV phasell e-laser 16.5 GeV (prov)	gauss gauss gauss gauss	16.7 2.96 1000 500	12.53 2.22 1000 500	10.03 1.78 1000 500	8.35 1.48 1000 500	7.16 1.27 1000 500	6.27 1.11 1000 500	5.57 0.99 1000 500	5.01 0.89 1000 500	4.56 0.81 1000 500	4.18 0.74 1000 500	3.133 500	2.506
peak SQED ξ peak SQED χ (16.5 GeV) phasell e-laser 16.5 GeV phasell e-laser 16.5 GeV (prov) phasell e-laser 17.5 GeV	gauss gauss gauss gauss gauss	16.7 2.96 1000 500 1000	12.53 2.22 1000 500 1000	10.03 1.78 1000 500 1000	8.35 1.48 1000 500 1000	7.16 1.27 1000 500 1000	6.27 1.11 1000 500 1000	5.57 0.99 1000 500 1000	5.01 0.89 1000 500 1000	4.56 0.81 1000 500 1000	4.18 0.74 1000 500 1000	3.133 500	2.506
peak SQED ξ peak SQED χ (16.5 GeV) phasell e-laser 16.5 GeV phasell e-laser 16.5 GeV (prov) phasell e-laser 17.5 GeV	gauss gauss gauss gauss gauss gauss gauss	16.7 2.96 1000 500 1000 2000	12.53 2.22 1000 500 1000 1000	10.03 1.78 1000 500 1000 1000	8.35 1.48 1000 500 1000 1000	7.16 1.27 1000 500 1000 1000	6.27 1.11 1000 500 1000 1000	5.57 0.99 1000 500 1000 2000	5.01 0.89 1000 500 1000 2000	4.56 0.81 1000 500 1000 2000	4.18 0.74 1000 500 1000 2000	3.133 500	2.506 500
peak SQED ¿ peak SQED ½ (15.5 GeV) phasell e-laser 16.5 GeV phasell e-laser 16.5 GeV phasell e-laser 15.5 GeV phasell g-laser 16.5 GeV phasell g-laser 16.5 GeV	gauss gauss gauss gauss gauss gauss gauss gauss	16.7 2.96 1000 500 1000 2000 1000	12.53 2.22 1000 500 1000 1000 1000	10.03 1.78 1000 500 1000 1000 1000	8.35 1.48 1000 500 1000 1000 1000	7.16 1.27 1000 500 1000 1000 1000	6.27 1.11 1000 500 1000 1000 1000	5.57 0.99 1000 500 1000 2000 1000	5.01 0.89 1000 500 1000 2000 1000	4.56 0.81 1000 500 1000 2000 1000	4.18 0.74 1000 500 1000 2000 1000	3.133 500 1000	2.506 500 1000
peak SOED ξ peak SOED χ (16.5 GeV) phasell e-laser 16.5 GeV phasell e-laser 16.5 GeV (prov) phasell e-laser 17.5 GeV phasell g-laser 16.5 GeV (prov) phasell g-laser 15.5 GeV	gauss gauss gauss gauss gauss gauss gauss gauss	16.7 2.96 1000 500 1000 2000 1000	12.53 2.22 1000 500 1000 1000 1000	10.03 1.78 1000 500 1000 1000 1000	8.35 1.48 1000 500 1000 1000 1000	7.16 1.27 1000 500 1000 1000 1000	6.27 1.11 1000 500 1000 1000 1000	5.57 0.99 1000 500 1000 2000 1000	5.01 0.89 1000 500 1000 2000 1000	4.56 0.81 1000 500 1000 2000 1000	4.18 0.74 1000 500 1000 2000 1000	3.133 500 1000	2.506 500 1000
peak SQED ¿ peak SQED ¿ (16.5 GeV) phasell e-laser 16.5 GeV (prov) phasell e-laser 16.5 GeV (prov) phasell g-laser 17.5 GeV phasell g-laser 16.5 GeV (prov) phasell g-laser 17.5 GeV phasell g-laser 17.5 GeV	gauss gauss gauss gauss gauss gauss gauss gauss fiat	16.7 2.96 1000 500 1000 2000 1000 1000	12.53 2.22 1000 500 1000 1000 1000 1000	10.03 1.78 1000 500 1000 1000 1000 1000	8.35 1.48 1000 500 1000 1000 1000 1000 1000	7.16 1.27 1000 500 1000 1000 1000 1000	6.27 1.11 1000 500 1000 1000 1000 1000 1000	5.57 0.99 1000 500 1000 2000 1000	5.01 0.89 1000 500 1000 2000 1000 1000	4.56 0.81 1000 500 1000 2000 1000	4.18 0.74 1000 500 1000 2000 1000 1000	3.133 500 1000 100	2.506 500 1000
peak SQED ; pask SQED ; (16.5 GeV) phasell e-laser 16.5 GeV (po) phasell e-laser 17.5 GeV phasell e-laser 17.5 GeV phasell g-laser 16.5 GeV (po) phasell g-laser 16.5 GeV phasell QPP ideal 8.0 GeV phasell QPPP ideal 8.0 GeV	gauss gauss gauss gauss gauss gauss gauss flat gauss	16.7 2.96 1000 500 1000 2000 1000 1000 100	12.53 2.22 1000 500 1000 1000 1000 1000 1000	10.03 1.78 1000 500 1000 1000 1000 100 100	8.35 1.48 1000 500 1000 1000 1000 1000 100 1	7.16 1.27 1000 500 1000 1000 1000 1000 100 100	6.27 1.11 1000 500 1000 1000 1000 1000 1000 100 100	5.57 0.99 1000 500 1000 2000 1000	5.01 0.89 1000 500 1000 2000 1000 1000 1000 1000	4.56 0.81 1000 500 1000 2000 1000	4.18 0.74 1000 500 1000 2000 1000 1000 1000	3.133 500 1000 100 100	2.506 500 1000 100 100
peak SQED ¢ posk SQED ҳ (16.5 GeV) phasell = laser 16.5 GeV phasell = laser 16.5 GeV phasell gaser 16.5 GeV (prov) phasell gaser 16.5 GeV phasell gaser 16.5 GeV phasell GePP ideal 8.0 GeV phasell GPPP ideal 8.0 GeV	gauss gauss gauss gauss gauss gauss gauss flat gauss	16.7 2.96 1000 500 1000 2000 1000 1000 1000	12.53 2.22 1000 500 1000 1000 1000 1000 1000	10.03 1.78 1000 500 1000 1000 1000 1000 1000	8.35 1.48 1000 500 1000 1000 1000 1000 1000 1000	7.16 1.27 1000 500 1000 1000 1000 1000 1000	6.27 1.11 1000 500 1000 1000 1000 1000 1000 1000 1000 1000	5.57 0.99 1000 500 1000 2000 1000	5.01 0.89 1000 500 1000 2000 1000 1000 1000	4.56 0.81 1000 500 1000 2000 1000	4.18 0.74 1000 500 1000 2000 1000 1000 1000	3.133 500 1000 100 100	2.506 500 1000 100 100
peak SGED { pask SGED x (16.5 GeV) phasell e-laser 16.5 GeV (prov) phasell e-laser 16.5 GeV (prov) phasell g-laser 16.5 GeV phasell g-laser 16.5 GeV phasell g-laser 16.5 GeV phasell g-laser 16.5 GeV phasell GPP ideal 8.0 GeV phasell GPP ideal 8.0 GeV	gauss gauss gauss gauss gauss gauss gauss fiat gauss	16.7 2.96 1000 500 1000 2000 1000 1000 1000	12.53 2.22 1000 500 1000 1000 1000 1000 1000	10.03 1.78 1000 500 1000 1000 1000 1000 1000	8.35 1.48 1000 500 1000 1000 1000 1000 1000	7.16 1.27 1000 500 1000 1000 1000 1000	6.27 1.11 1000 500 1000 1000 1000 1000 1000 1000 1000	5.57 0.99 1000 500 1000 2000 1000	5.01 0.89 1000 500 1000 2000 1000 1000	4.56 0.81 1000 500 1000 2000 1000	4.18 0.74 1000 500 1000 2000 1000 1000	3.133 500 1000 100	2.506 500 1000 100

## Aug-Nov 2020 Data Runs, bunch/pulse crossings completed

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