CEPC LumiCal group meeting

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Comparison

	BHLUMI(trial0)				BHLUMI(trial1)			
$Events$	1e06				1e06			
$CMS\ (GeV)$	92.3				92.3			
$Infrared\ cut$	1e-04				1e-04			
$thmin\ (Rad)$	0.007				0.007			
$thmax\ (Rad)$	1.571				1.571			
$The\ total\ cross\ section\ (nb)$	2560.769				2560.769			
$th1\ (Rad)$	0.007	0.010	0.010	0.010	0.007	0.010	0.010	0.010
$th2\ (Rad)$	1.571	0.785	1.571	0.100	1.571	0.785	1.571	0.100
$cut_1\ (nb)$	2552.234	1256.854	1258.024	1233.843	2552.234	1256.854	1258.024	1233.843
$cut_2\ (nb)$	2428.167	1191.649	1191.938	1178.932	2428.167	1191.649	1191.938	1178.932
$cut_3\ (nb)$	1500.365	716.201	716.375	707.538	1500.365	716.201	716.375	707.538

Comparison

	BHLUMI(trial0)				ReneSANCe(trial0)				Difference			
$Events$	1e06				1e06							
$CMS\ (GeV)$	92.3				92.3							
$Infrared\ cut$	1e-04				1e-04							
$thmin\ (Rad)$	0.007				0.007							
$thmax\ (Rad)$	1.571				(1.571)							
$The\ total\ cross\ section\ (nb)$	2560.769				2560.420				-0.0136%			
$th1\ (Rad)$	0.007	0.010	0.010	0.010	0.007	0.010	0.010	0.010	0.007	0.010	0.010	0.010
$th2\ (Rad)$	1.571	1.571	0.785	0.100	1.571	1.571	0.785	0.100	1.571	1.571	1.571	0.100
$cut_1\ (nb)$	2552.234	1258.024	1256.854	1233.843	2558.605	1311.708	1310.444	1281.188	0.25%	4.27%	4.26%	3.84%
$cut_2\ (nb)$	2428.167	1191.938	1191.649	1178.932	2448.968	1255.031	1254.427	1234.409	0.86%	5.29%	5.27%	4.71%
$cut_3\ (nb)$	1500.365	716.375	716.201	707.538	1290.861	655.736	655.178	639.060	-13.96%	-8.465%	-8.52%	-9.68%

Comparison

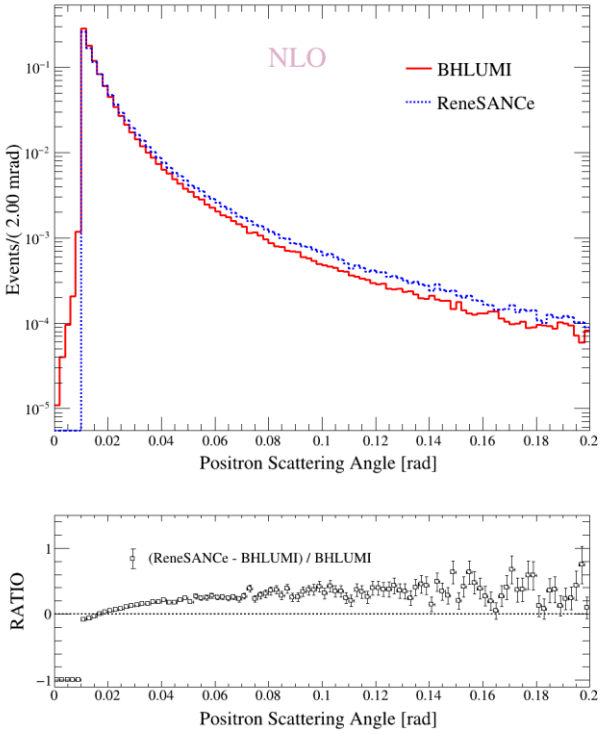
	BHLUMI(trial2)				ReneSANCe(trial2)				Difference			
$Events$	1e06				1e06							
$CMS\ (GeV)$	92.3				92.3							
$Infrared\ cut$	1e-04				1e-04							
$thmin\ (Rad)$	0.025				0.025							
$thmax\ (Rad)$	1.571				(1.571)							
$The\ total\ cross\ section\ (nb)$	203.253				203.671				-0.206%			
$th1\ (Rad)$	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
$th2\ (Rad)$	1.571	0.785	0.100	0.080	1.571	0.785	0.100	0.080	1.571	0.785	0.100	0.080
$cut_1\ (nb)$	202.388	201.797	184.863	176.465	202.584	201.724	183.122	173.889	0.0968%	-0.0362%	-0.942%	-1.46%
$cut_2\ (nb)$	190.675	190.427	177.904	170.622	194.713	194.102	178.487	169.987	2.11%	1.93%	0.328%	-0.372%
$cut_3\ (nb)$	107.036	106.890	99.351	95.148	109.368	108.877	97.665	92.062	2.18%	1.86%	-1.70%	-3.24%

Comparison

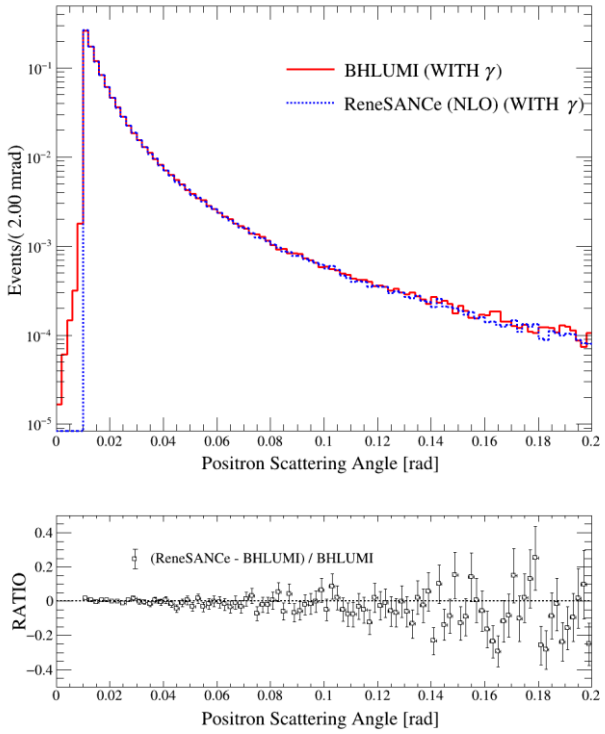
	BHLUMI(trial3)				ReneSANCe(trial3)				Difference			
$Events$	1e06				1e06							
$CMS\ (GeV)$	92.3				92.3							
$Infrared\ cut$	1e-04				1e-04							
$thmin\ (Rad)$	0.010				0.010							
$thmax\ (Rad)$	1.571				(1.571)							
$The\ total\ cross\ section\ (nb)$	1259.280				1259.361				-0.00643%			
$th1\ (Rad)$	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
$th2\ (Rad)$	1.571	0.785	0.100	0.080	1.571	0.785	0.100	0.080	1.571	0.785	0.100	0.080
$cut_1\ (nb)$	1254.889	1253.802	1231.169	1221.183	1257.831	1256.441	1228.925	1216.130	0.234%	0.210%	-0.182%	-0.414%
$cut_2\ (nb)$	1190.680	1190.410	1177.849	1170.784	1203.834	1203.078	1184.031	1173.697	1.105%	1.064%	-0.525%	0.249%
$cut_3\ (nb)$	716.413	716.243	707.637	702.840	629.589	628.934	613.512	605.743	-12.11%	-12.19%	-13.30%	-13.81%

Comparison

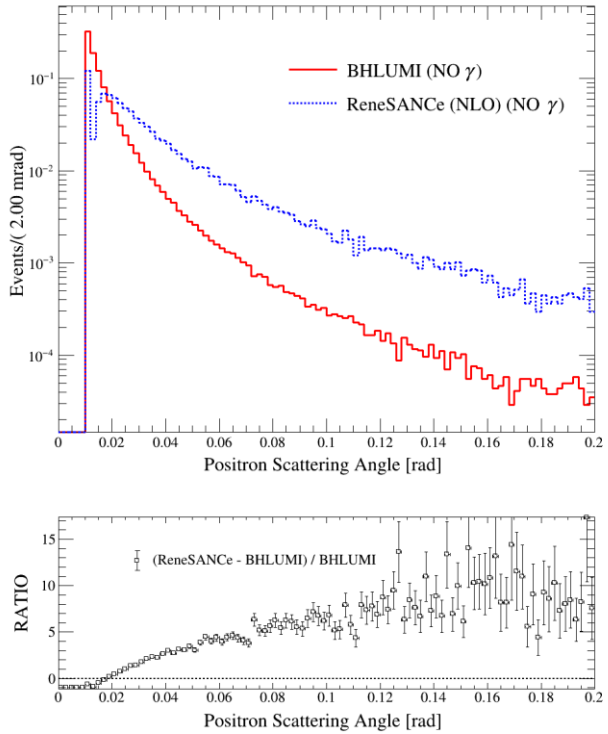
Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



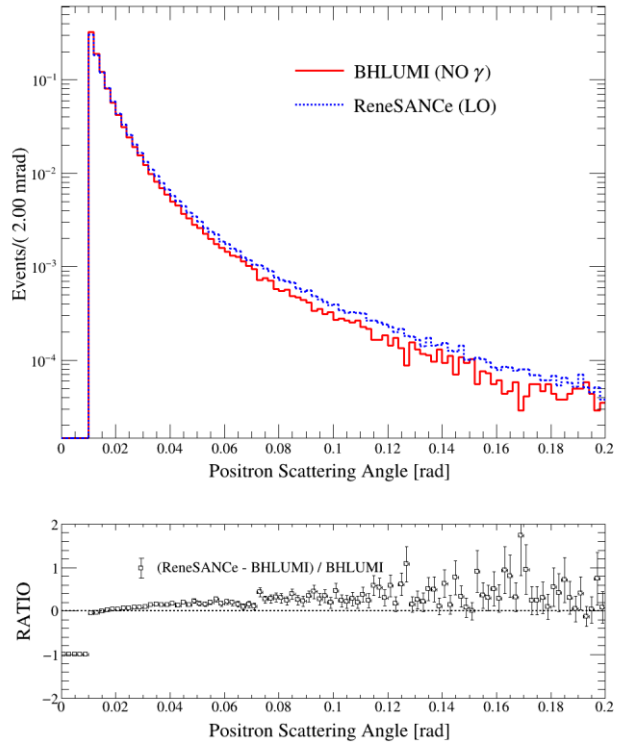
BHLUMI : 1e+06
ReneSANCe : 1e+06



BHLUMI (NLO)(with photons) : 657471
ReneSANCe (NLO) (with photons) : 953210



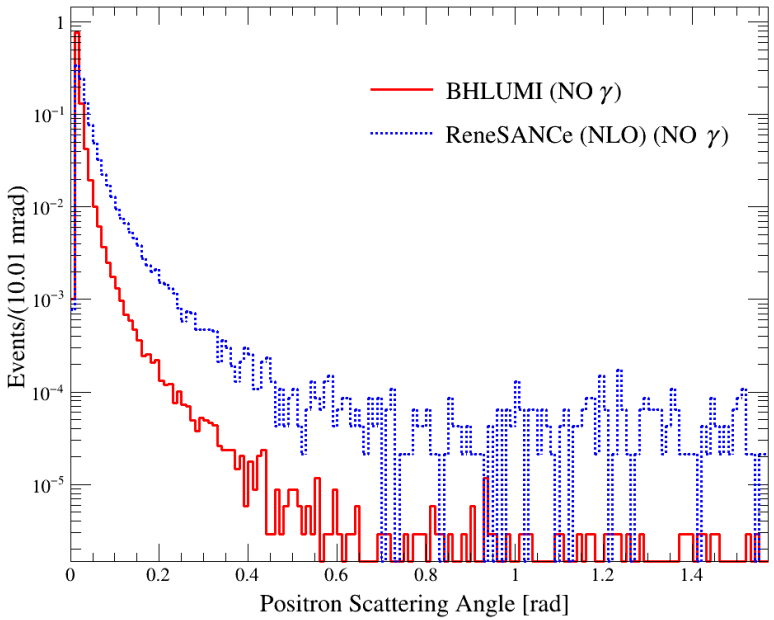
BHLUMI (NLO)(no photon) : 342529
ReneSANCe (NLO)(no photon): 46790

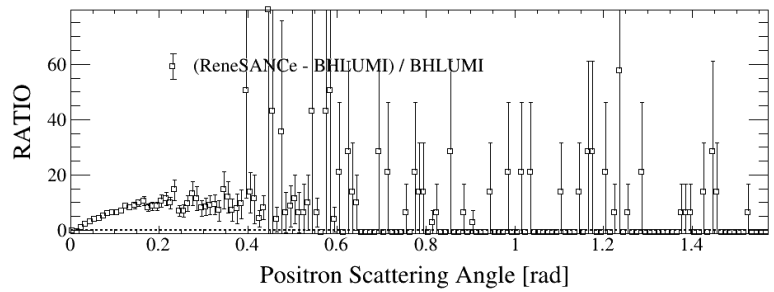


BHLUMI (NLO)(no photon) : 342529
ReneSANCe (LO): 1e+06

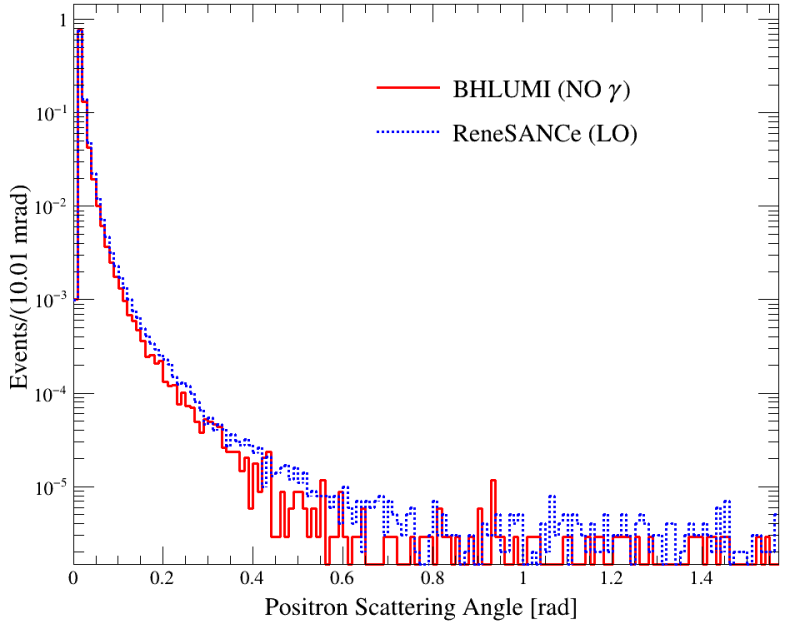
Comparison

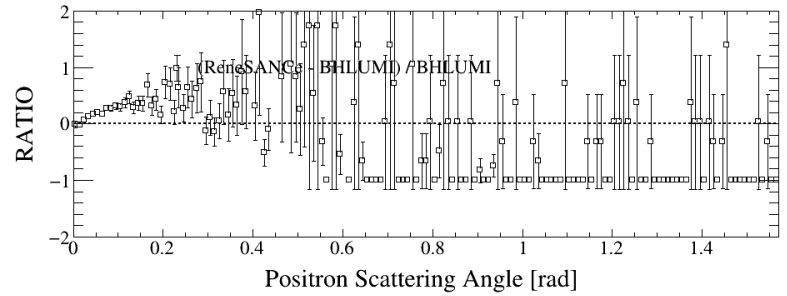
Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$





BHLUMI (NLO)(no photon) : 342529
ReneSANCe (NLO)(no photon): 46790

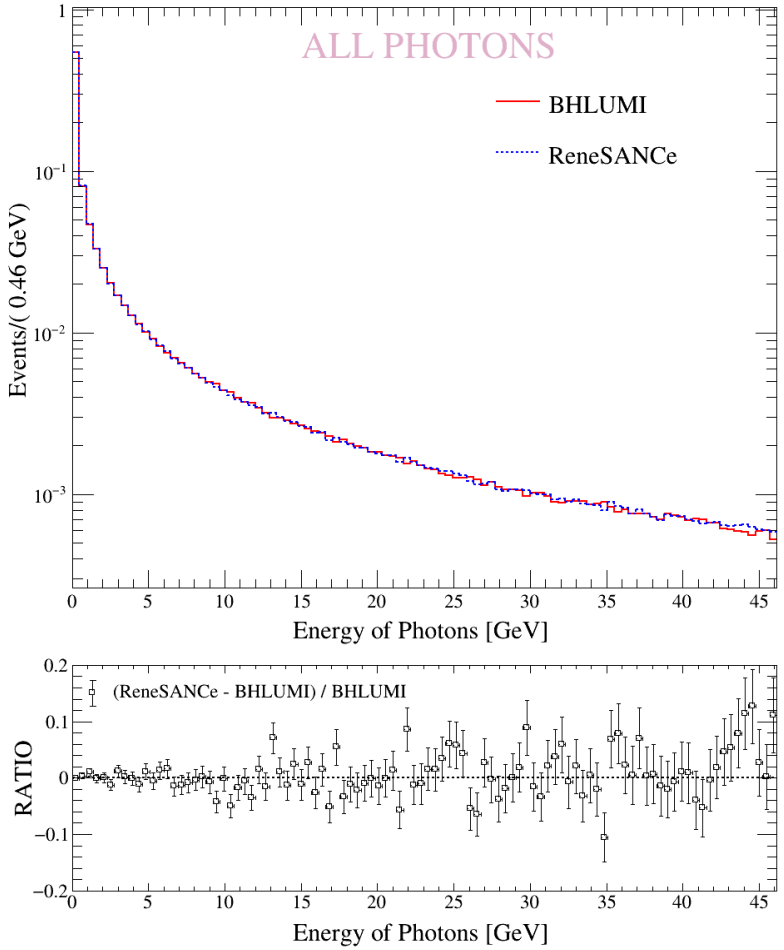




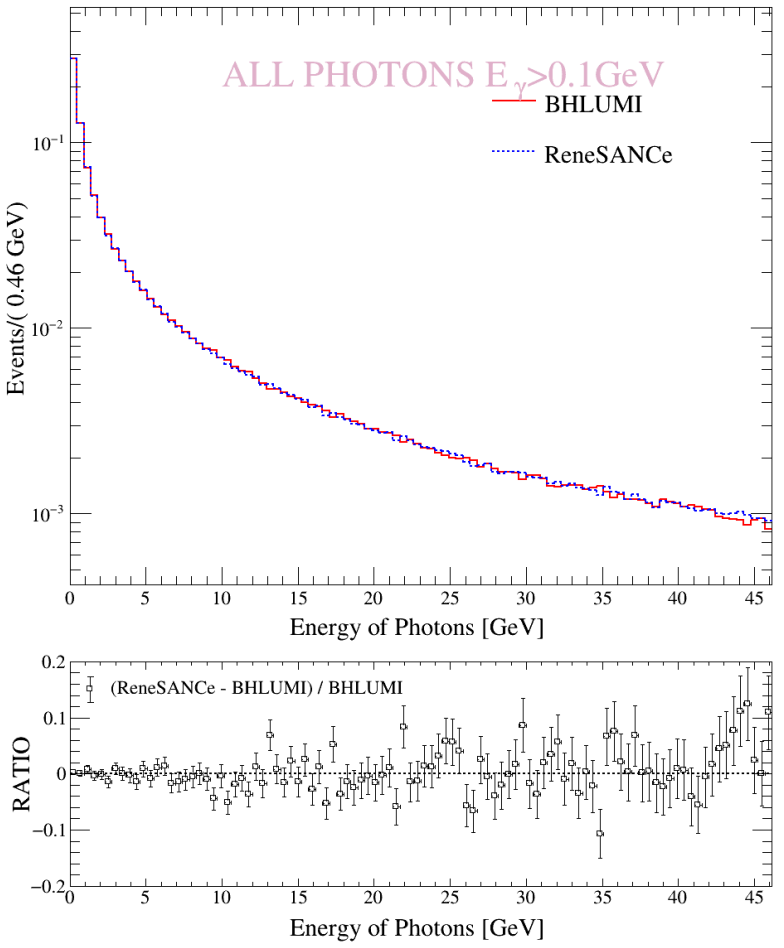
BHLUMI (NLO)(no photon) : 342529
ReneSANCe (LO): 1e+06

Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



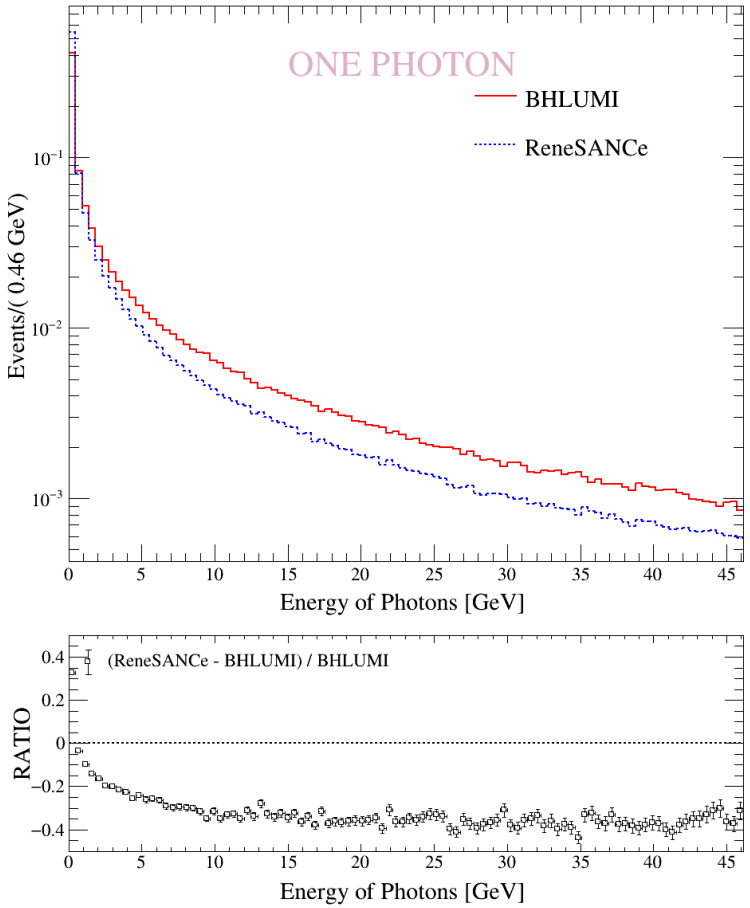
BHLUMI : 1.06896e+06
ReneSANCe : 0.953210e+06



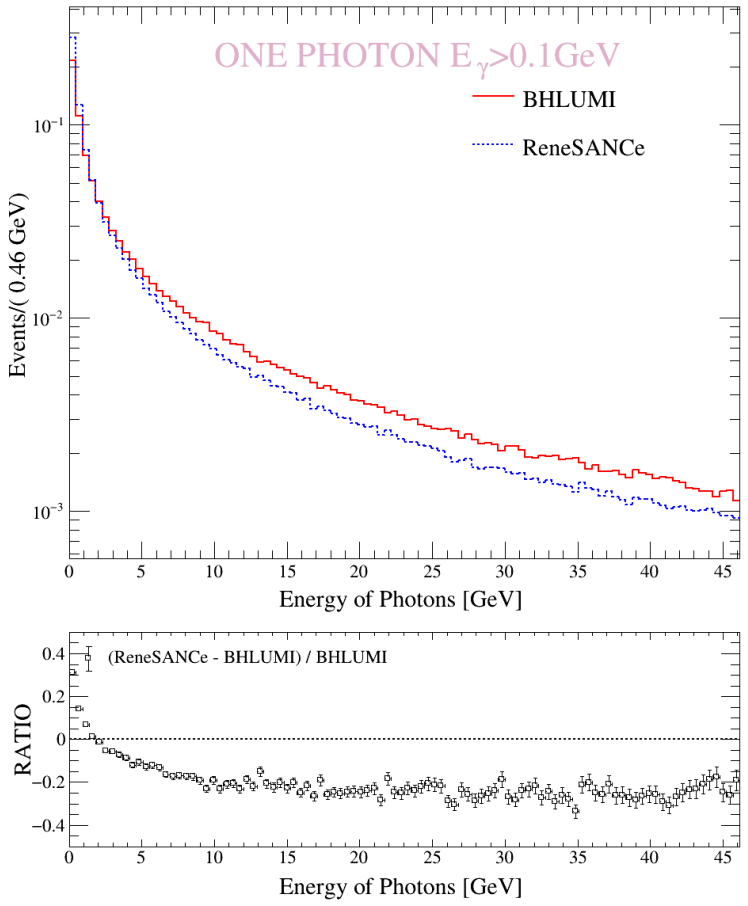
BHLUMI : 679680
ReneSANCe : 607355

Comparison

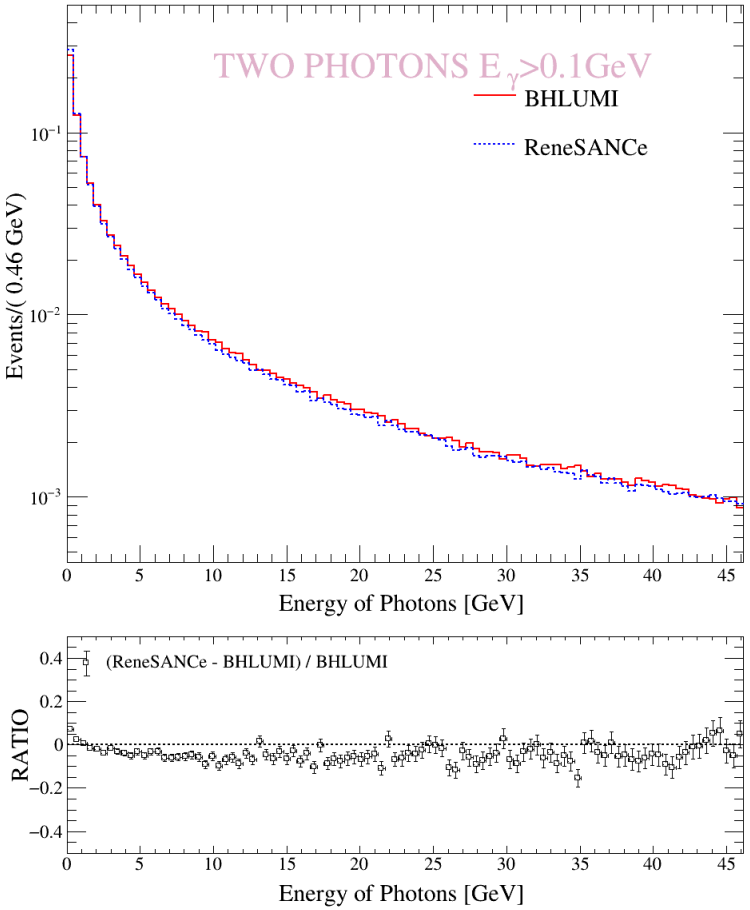
Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



BHLUMI : 657471
ReneSANCe : 953210



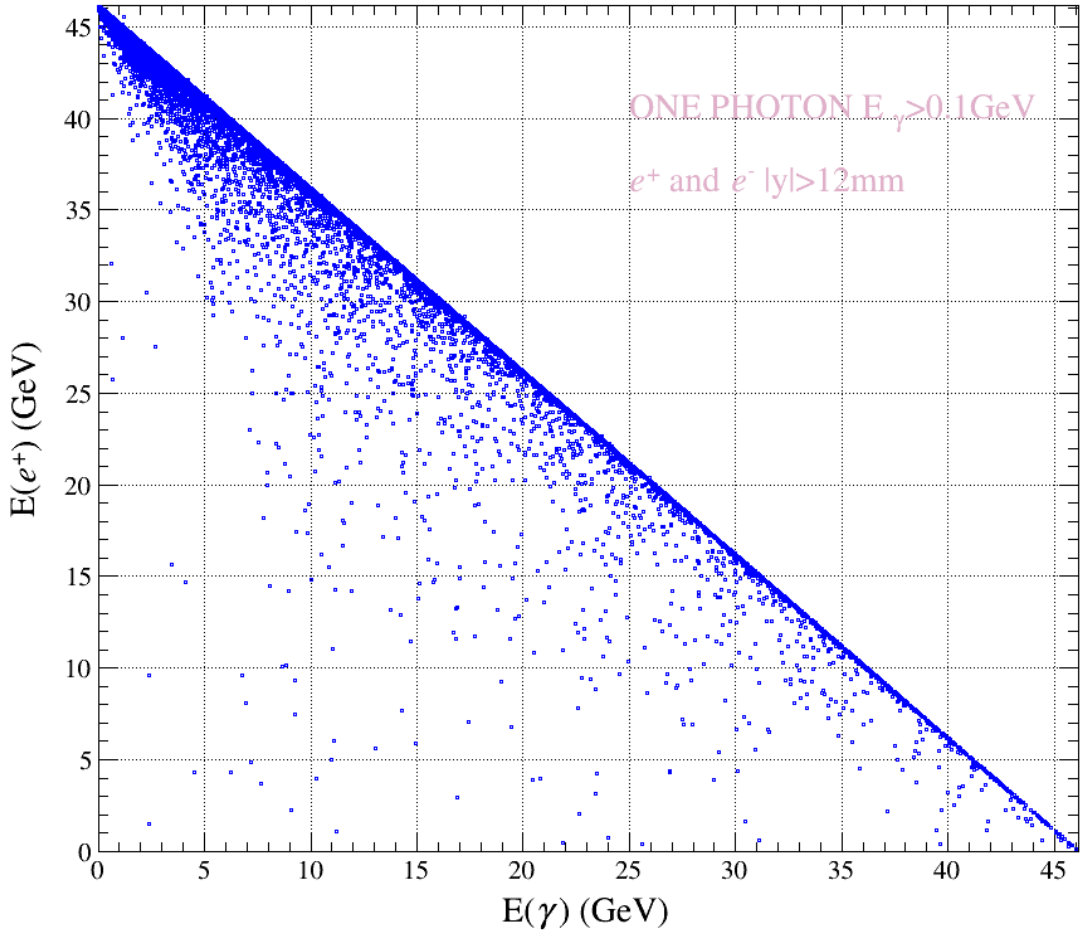
BHLUMI : 494729
ReneSANCe : 607355



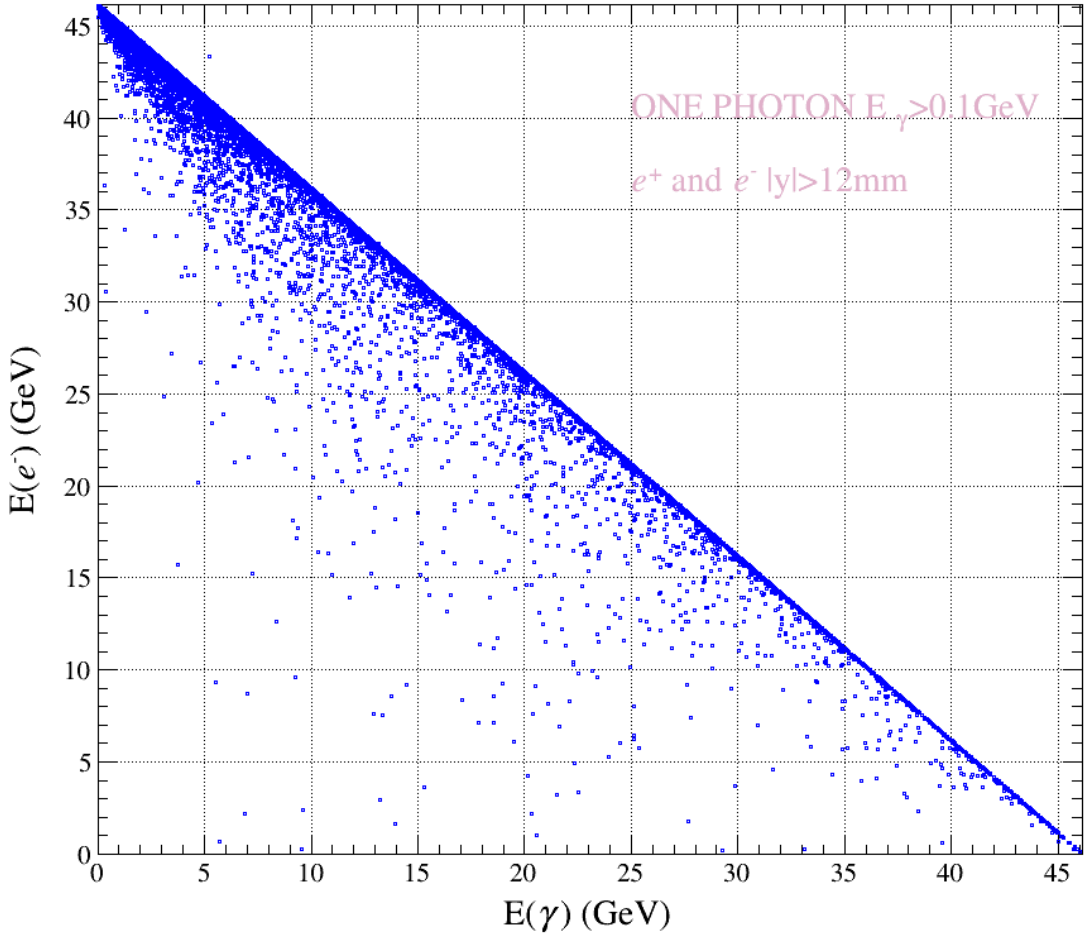
BHLUMI : 642805
ReneSANCe : 607355

Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



BHLUMI : 35612



BHLUMI : 35664

Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\ nb$, $\Delta\sigma = -0.00643\%$

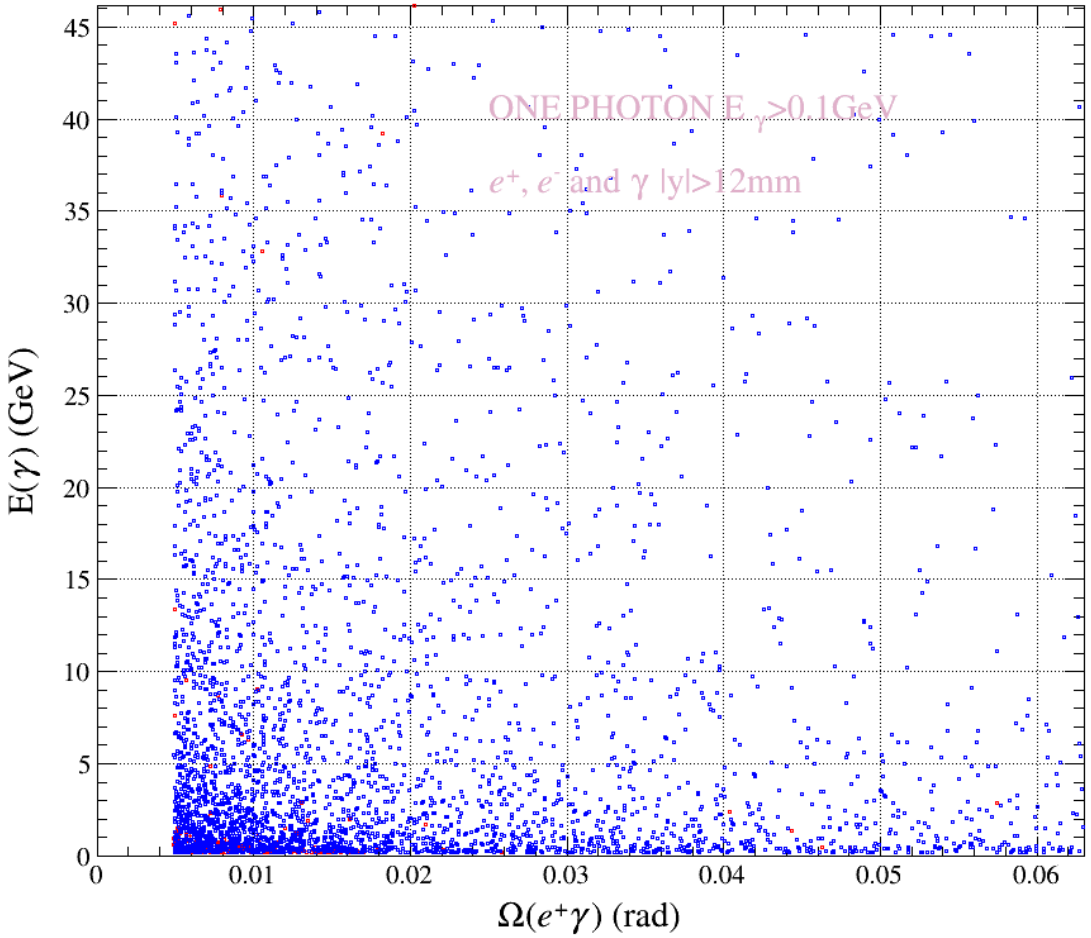
	$\|y(e^+), \|y(e^-)\| > 12\ mm$		$\|y(e^+), \|y(e^-)\| > 12\ mm$ $E_\gamma > 0.1GeV$			$\|y(e^+), \|y(e^-)\|, \|y(\gamma)\| > 12\ mm$ $E_\gamma > 0.1GeV$				
BHLUMI	$e^\pm, 0\gamma, n\gamma$	$e^\pm, n\gamma$	$e^\pm, n\gamma$	$e^\pm, ISR$	$e^\pm, FSR$	$e^\pm, n\gamma$	$e^\pm, ISR$	$e^\pm, FSR$	$\Omega(e, FSR) > 5mRad$	$\Omega(p, FSR) > 5mRad$
$Events$	137014	94218	71276	9641	61635	33940	8990	24950	3917	3835
$ratio$	100.00%	68.77%	52.02%	7.04%	44.98%	24.77%	6.56%	18.21%	2.86%	2.80%
$\sigma(nb)$	172.54	118.65	89.76	12.14	77.62	42.74	11.32	31.42	4.93	4.83
ReneSANCe	$e^\pm, 0\gamma, n\gamma$	$e^\pm, n\gamma$	$e^\pm, n\gamma$	$e^\pm, ISR$	$e^\pm, FSR$	$e^\pm, n\gamma$	$e^\pm, ISR$	$e^\pm, FSR$	$\Omega(e, FSR) > 5mRad$	$\Omega(p, FSR) > 5mRad$
$Events$	161022	143049	89823	34100	55723	42548	32469	10079	4349	4221
$ratio$	100.00%	88.84%	55.78%	21.18%	34.61%	26.42%	20.16%	6.26%	2.70%	2.62%
$\sigma(nb)$	202.78	180.15	113.12	42.94	70.18	53.58	40.89	12.69	5.48	5.32

	$\|y(e^+)\|, \|y(e^-)\|$ > 12 mm		$\|y(e^+)\|, \|y(e^-)\| > 12$ mm; $E_\gamma > 0.1$ GeV			$\|y(e^+)\|, \|y(e^-)\|, \|y(\gamma)\| > 12$ mm; $E_\gamma > 0.1$ GeV			
	$e^\pm, 0\gamma, n\gamma$	$e^\pm, n\gamma$	$e^\pm, n\gamma$	$e^\pm$,ISR	$e^\pm$,FSR	$e^\pm, n\gamma$	$e^\pm$,ISR	$e^\pm$,FSR	$\Omega(e$,FSR) > 5 mRad
events	1405230	631622	445566	233828	211738	206845	12440	194405	41612
ratio	100%	44.9%	31.7%	16.6%	15.1%	14.7%	0.89%	13.8%	2.96%

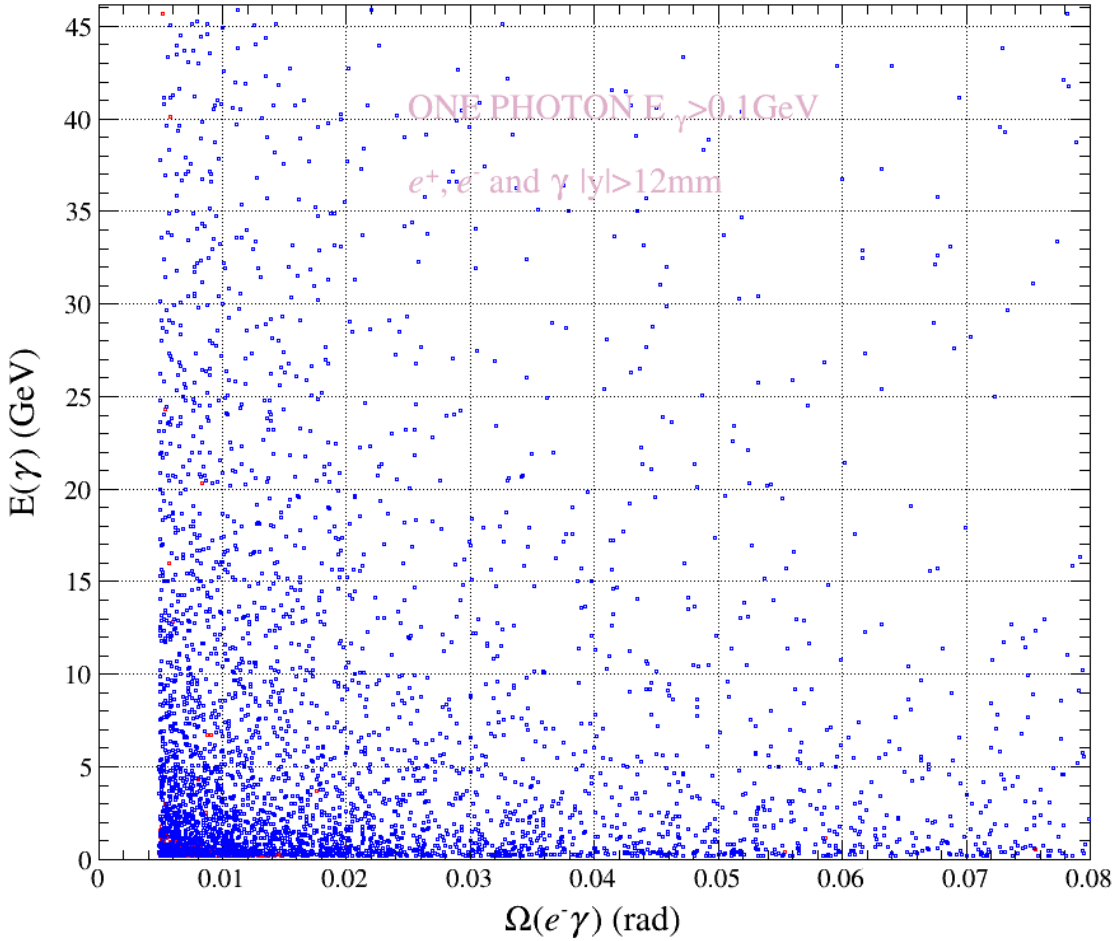
Table 1.2 Bhabha events of BHLUMI generated in (Th1,Th2) of (10,80) mRad are boosted to the LumiCal acceptance of $|y| > 12$ mm. The events ratio with $E(\gamma) > 0.1$ GeV, and the most energetic photon being an ISR or FSE are selected by the smaller opening angle to electrons. The selections are listed for θ to beam centers and y cuts in front of LYSO at $|z| = 647$ mm, corresponding to the lowest LAB frame of 18.5 mRad.

Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



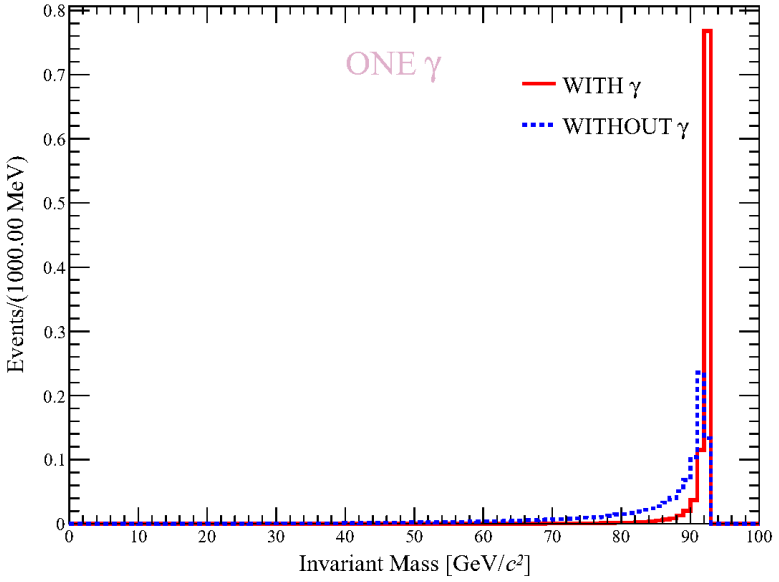
BHLUMI ISR: 248
BHLUMI FSR : 3835

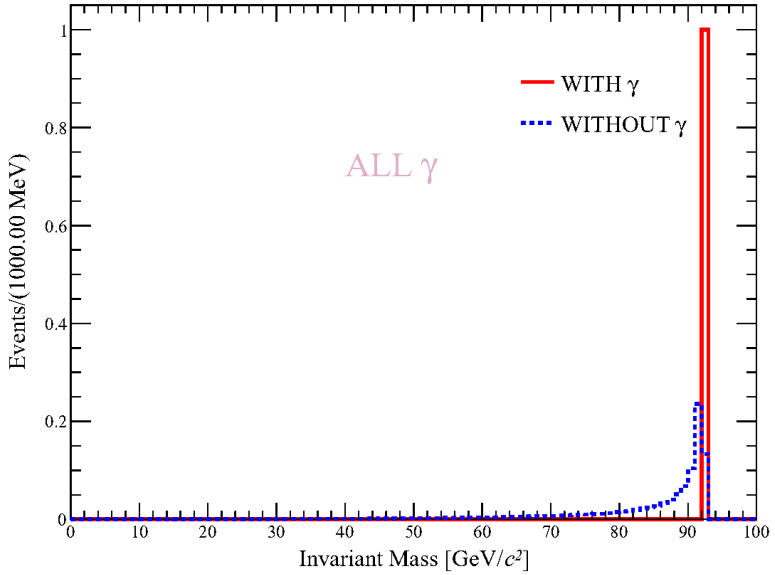


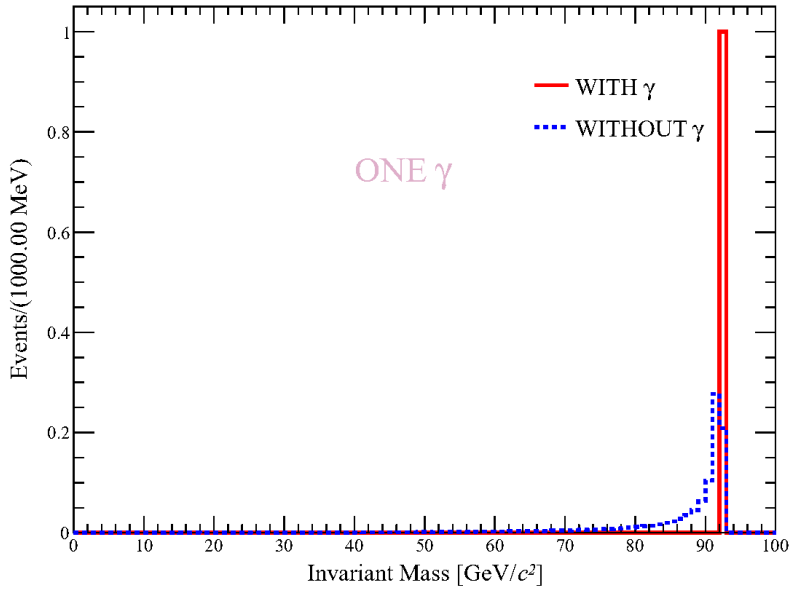
BHLUMI ISR : 244
BHLUMI FSR : 3917

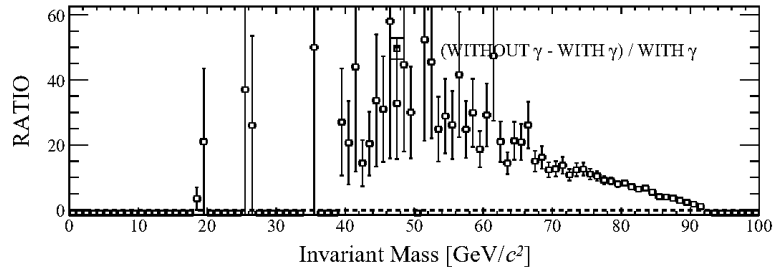
Comparison

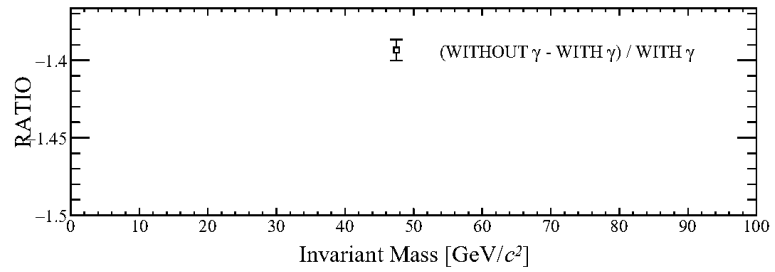
Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$

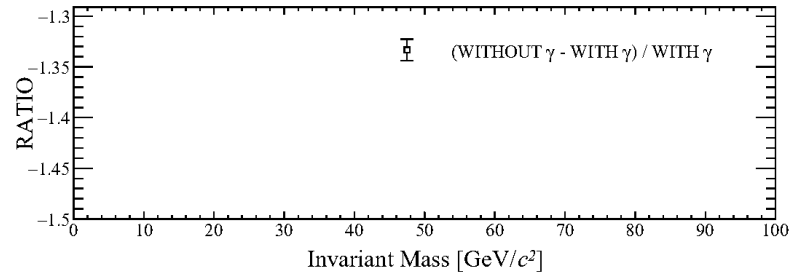






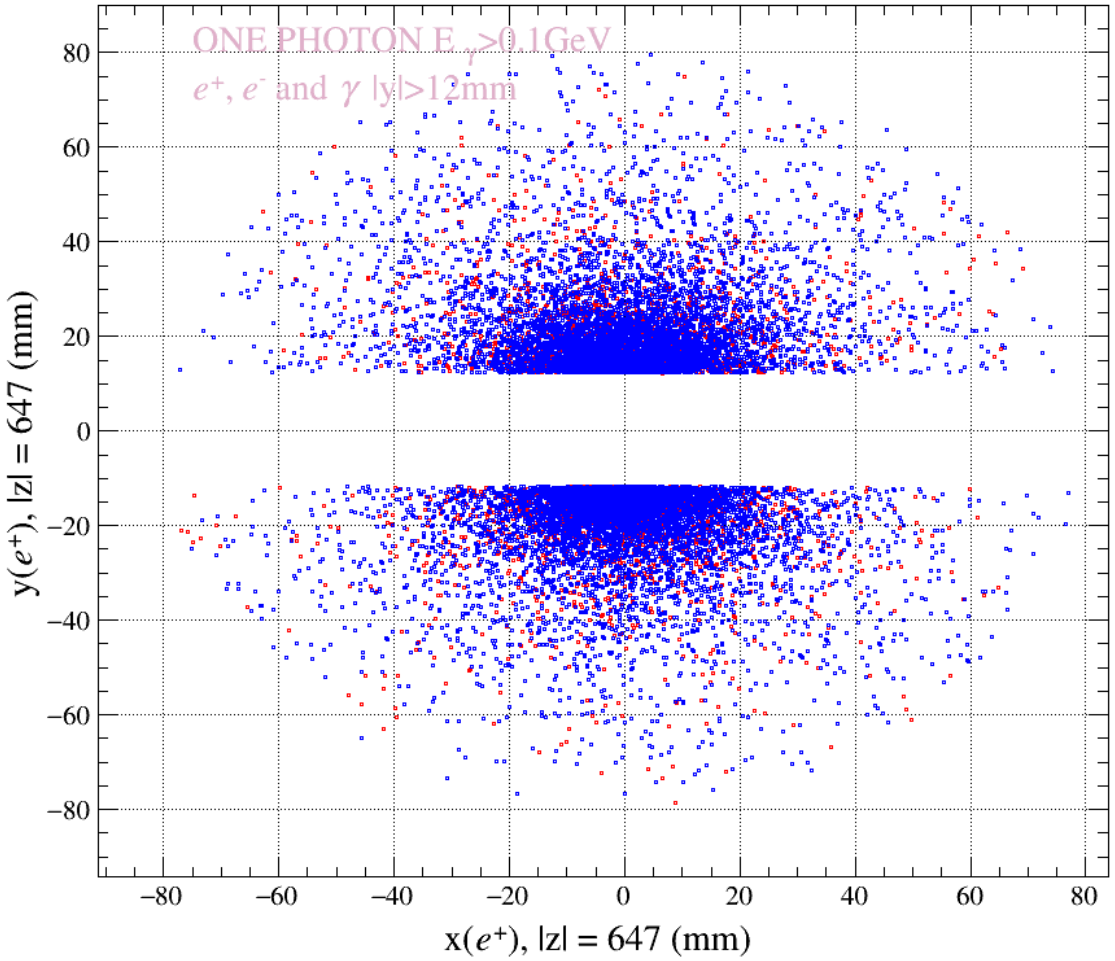




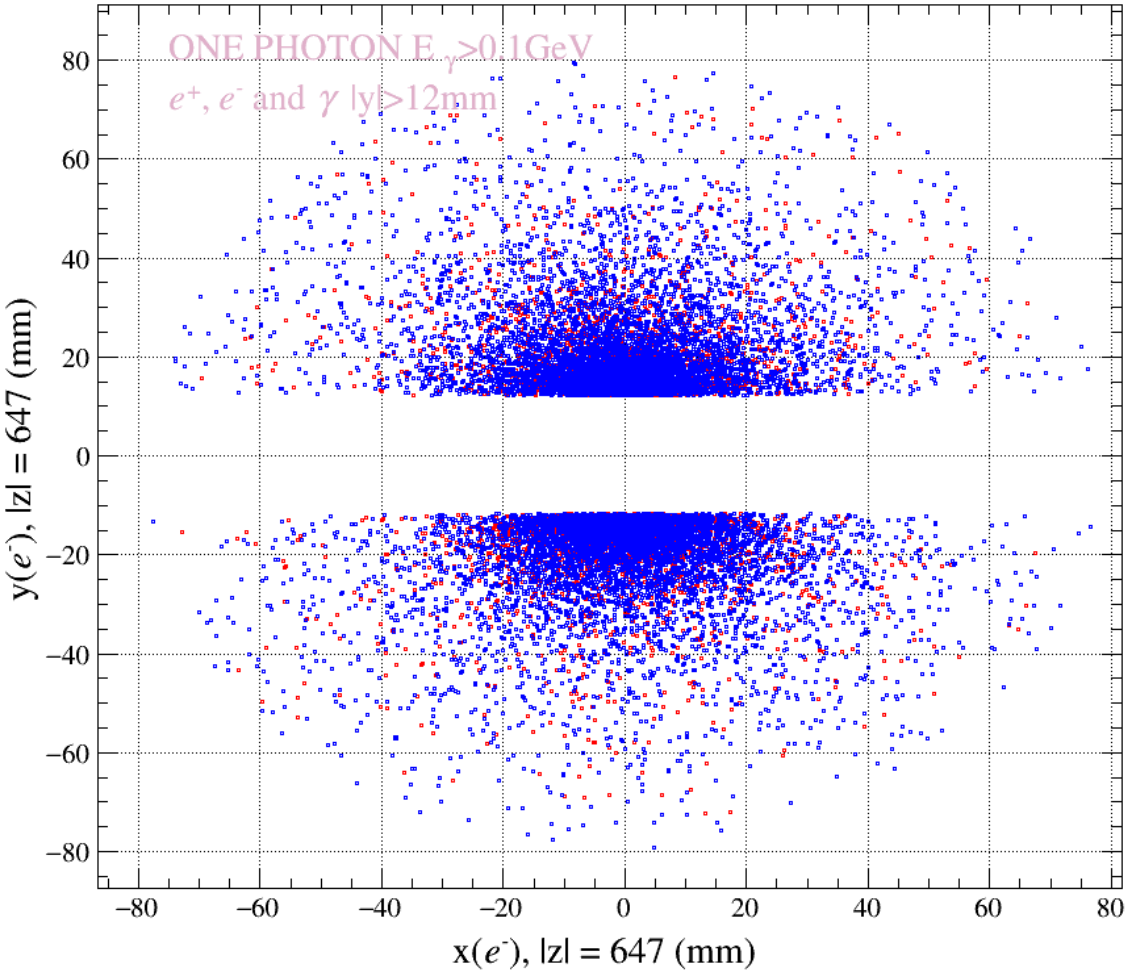


Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



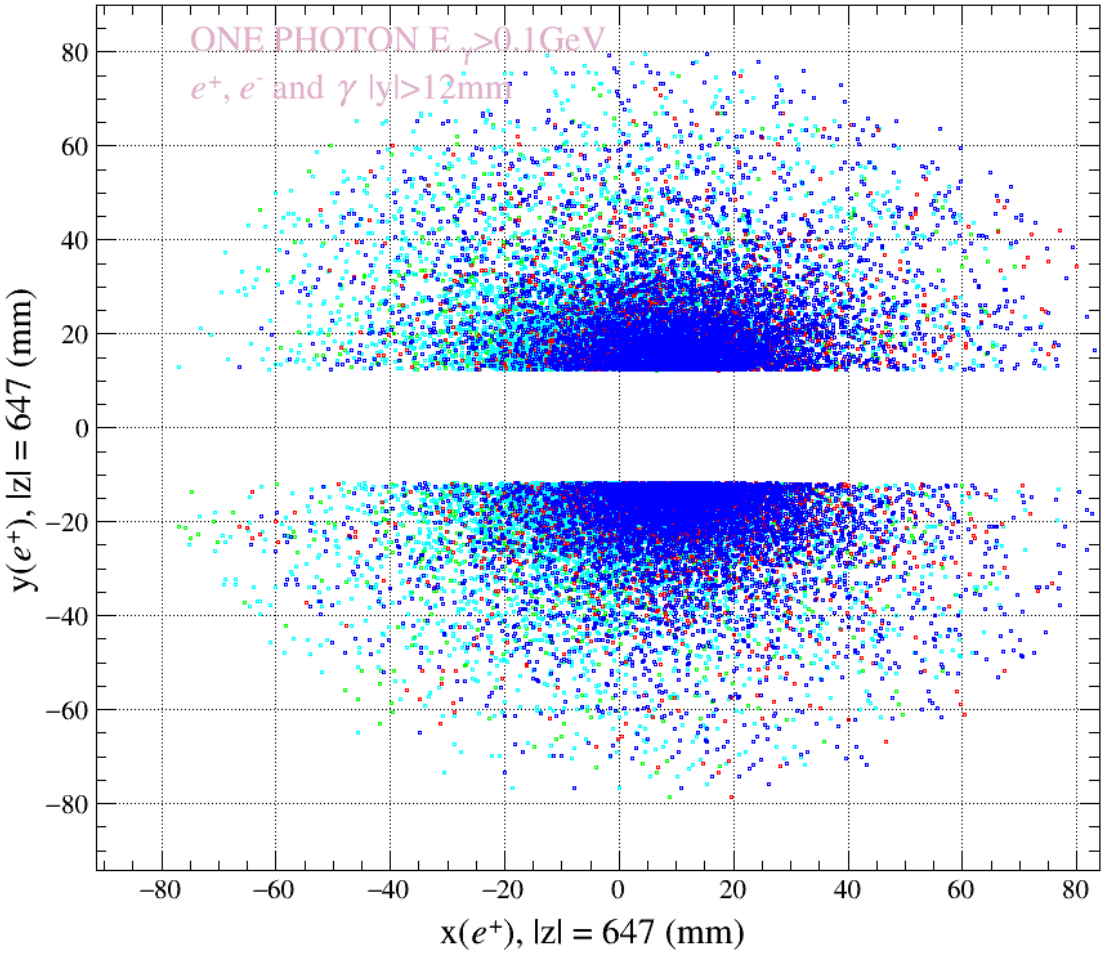
BHLUMI ISR: 4495
BHLUMI FSR : 12481



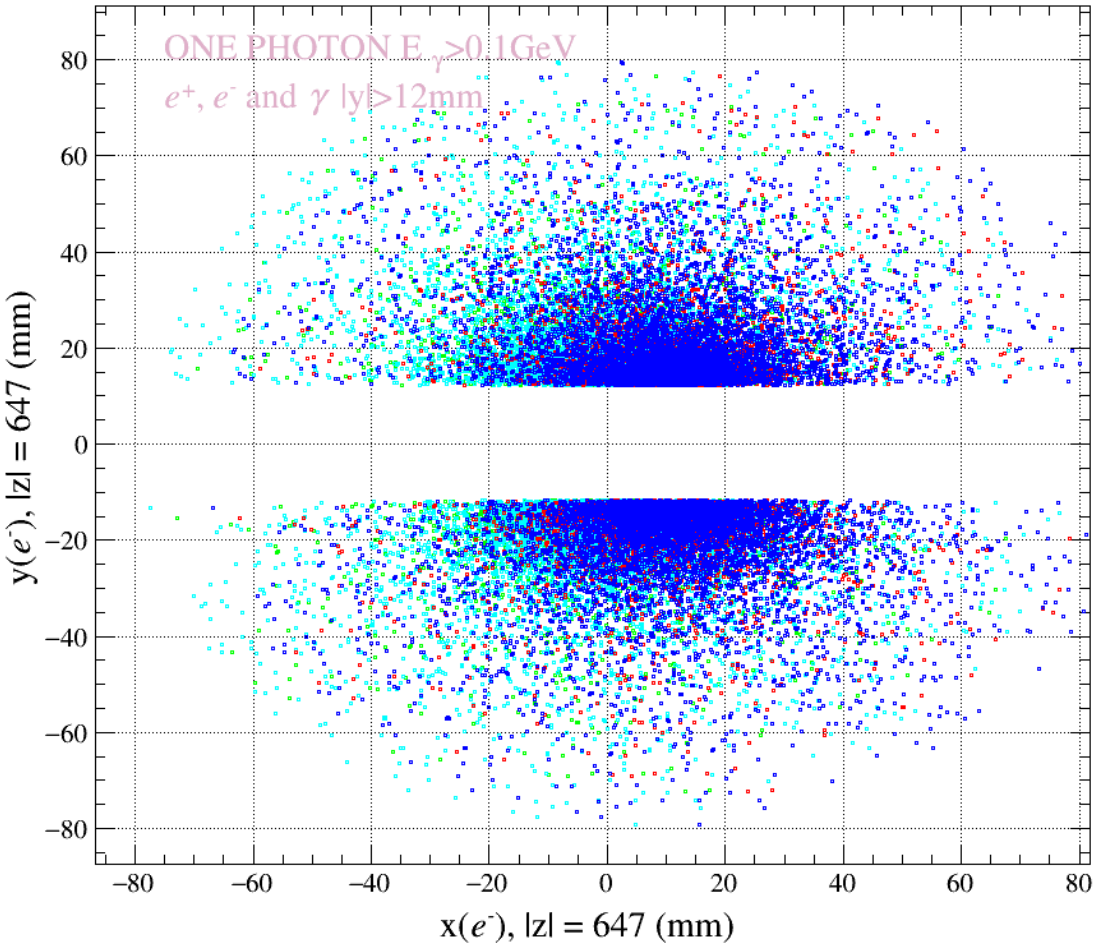
BHLUMI ISR : 4495
BHLUMI FSR : 12469

Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



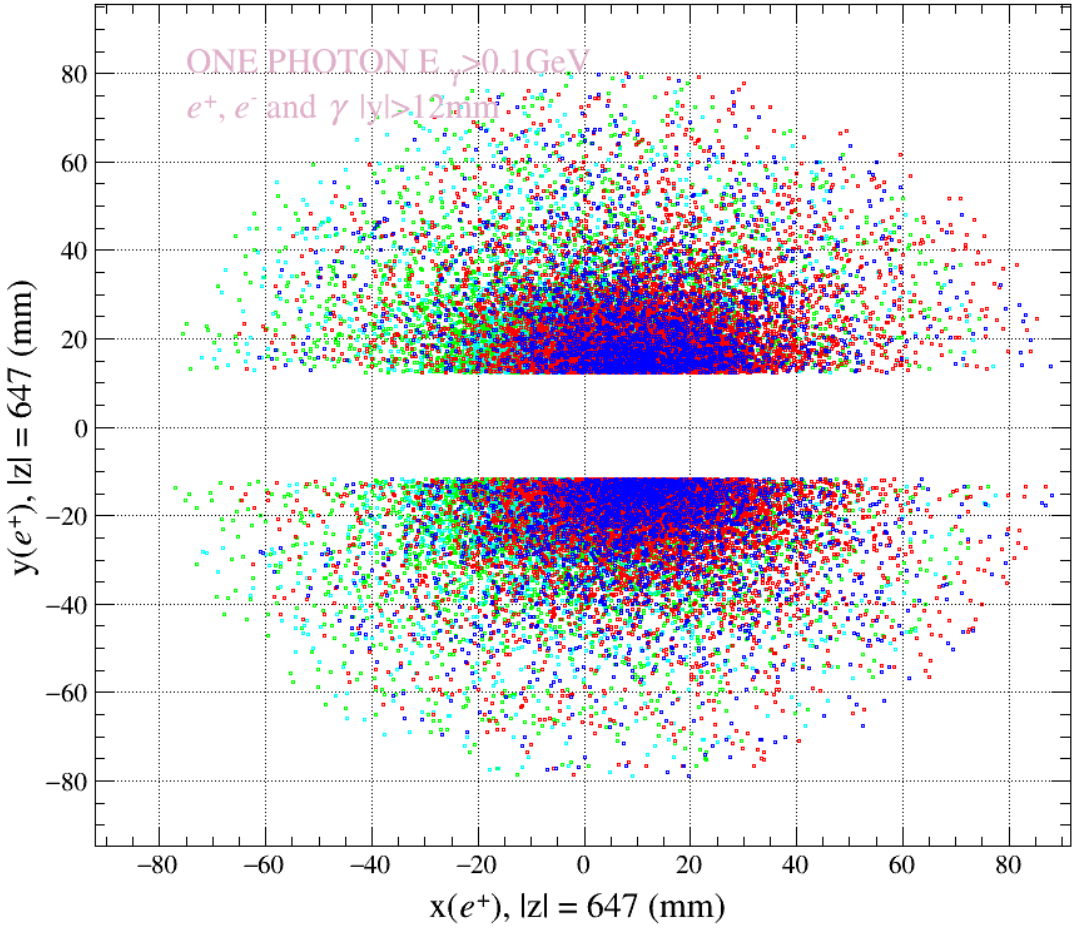
BHLUMI ISR: 4495
BHLUMI FSR : 12481



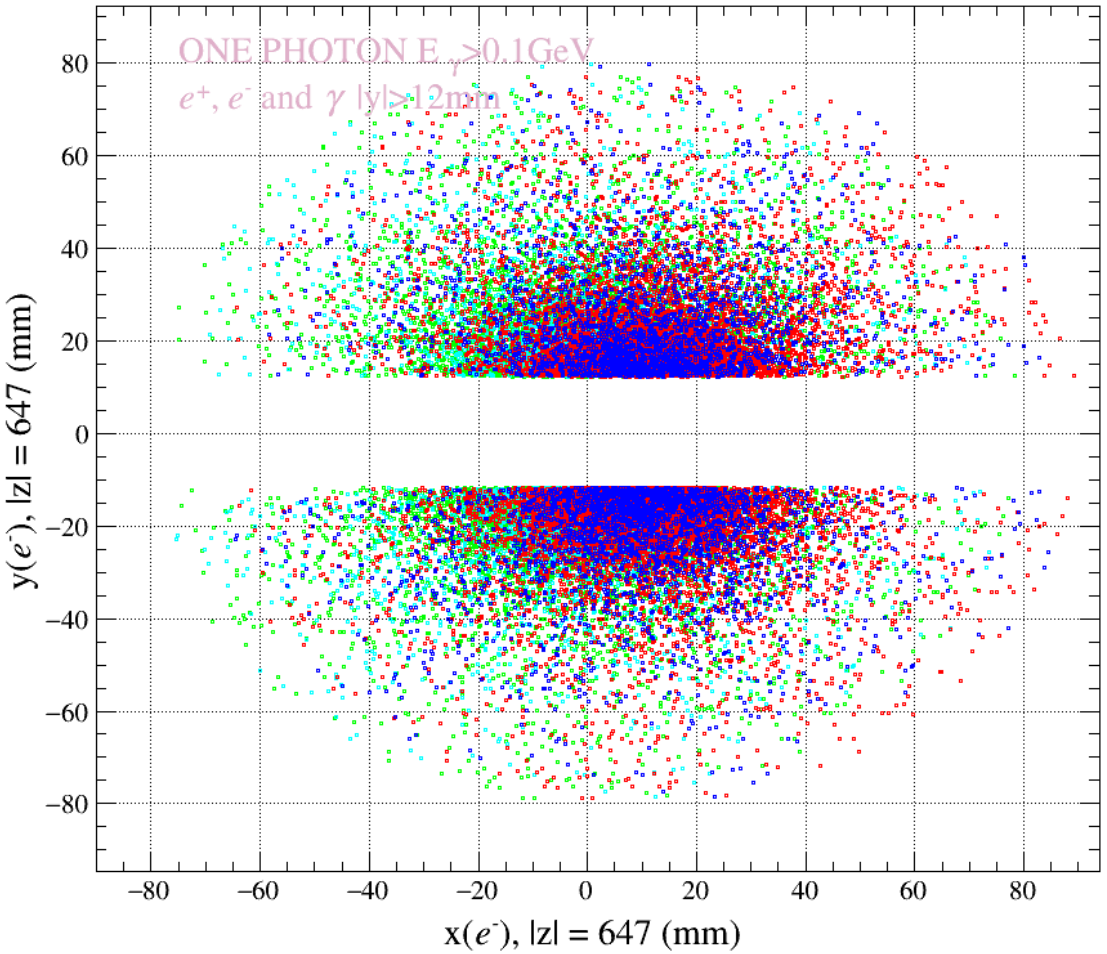
BHLUMI ISR : 4495
BHLUMI FSR : 12469

Comparison

Trial3 : thmin = 0.01rad, thmax = 1.571rad,$\sigma \approx 1259\, nb$, $\Delta\sigma = -0.00643\%$



ReneSANCe ISR: 16283
ReneSANCe FSR : 4983



ReneSANCe ISR : 16186
ReneSANCe FSR : 5096