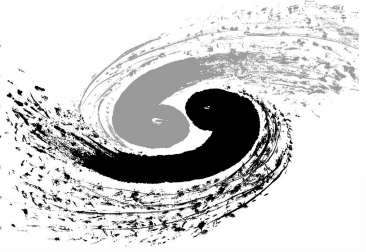


CEPC SR background Study

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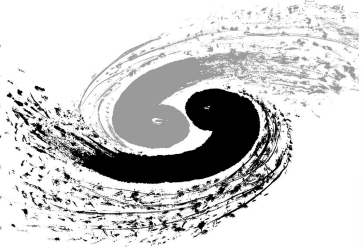


Motivation

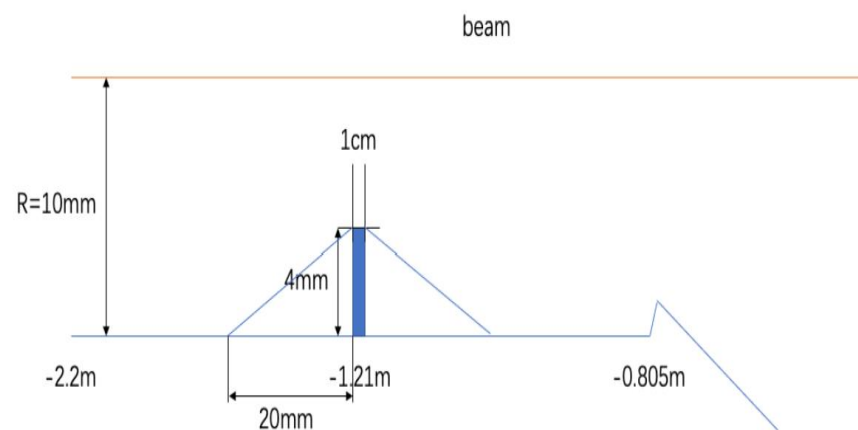
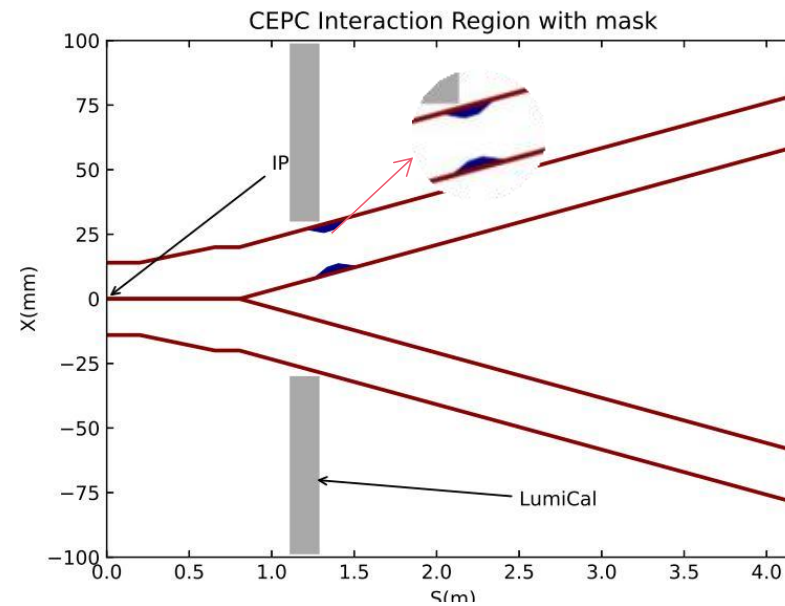
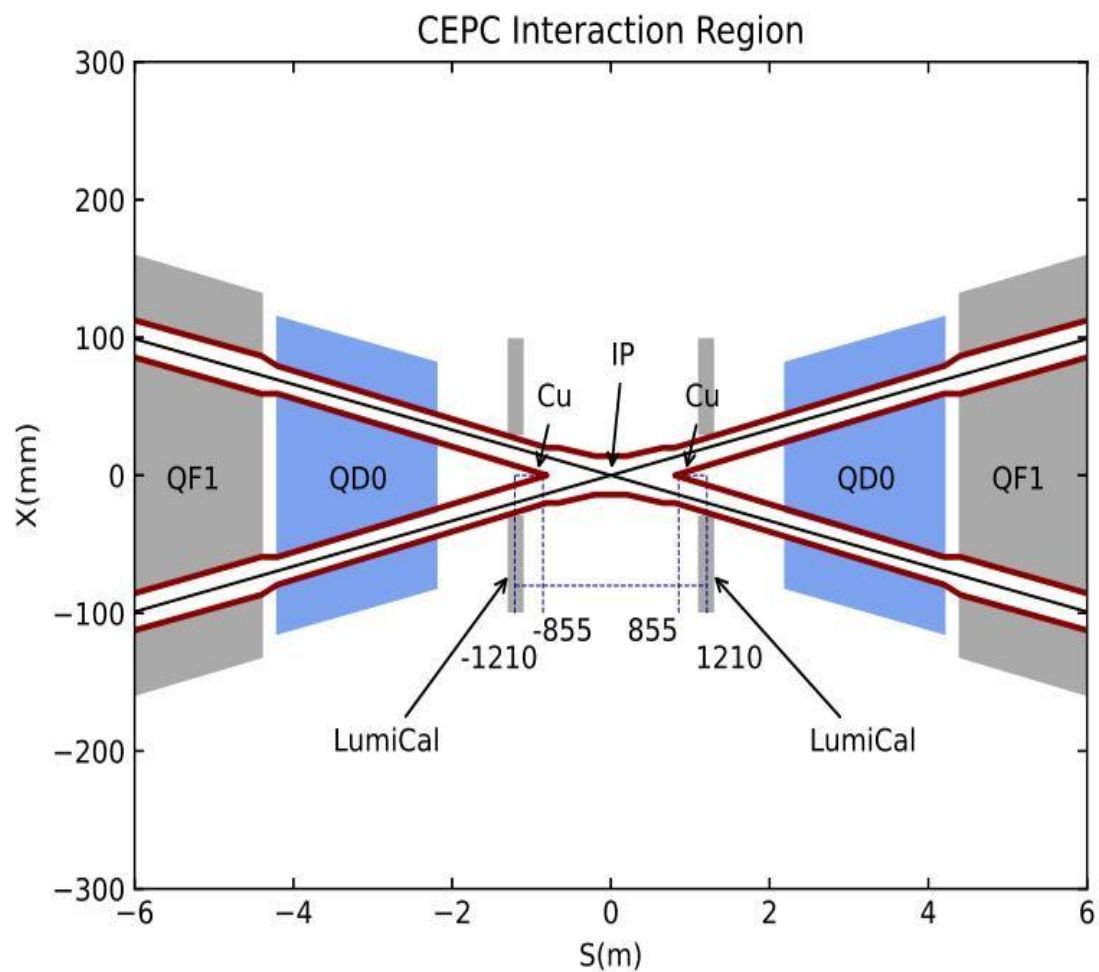
The circular collider will produce serious synchrotron radiation, which is need to be shielded for machine protection

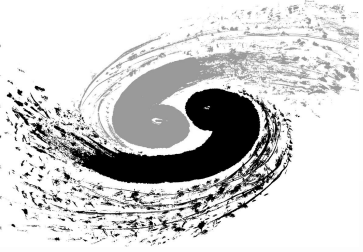
Synchrotron radiation is a considerable background for Circular Collider which affects not only detector elements but also data anlysis

Design optimization schemes of shielding synchrotron radiation backgrounds



Mask Introduction





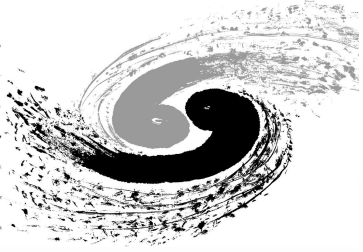
Data after adding mask

position	Number of photons hit	Hit power(W)
upstream	36191438.0	197524100*e-5
Be	39400.0	30.57*e-5
downstream	43773.0	489816*e-5

design	Number of photons hit	Hit power(W)
1.21-mask-Cu	1736.0	1.45*e-5
2.2-mask-Cu	1147.0	0.94*e-5

design	Number of photons hit	Hit power(W)
1.21-mask-Cu	1736.0	1.45*e-5
1.21-mask-Cu-5μmAu-Be	216.0	0.273*e-5

design	Number of photons hit	Hit power(W)
1.21-mask-Cu	1736.0	1.45*e-5
1.21-mask-W	1698.0	1.36*e-5



Summary



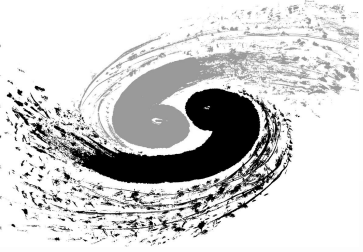
Setting the mask effectively reduces the number of photons that hit Be
(8980 to 474)

Where the material has little effect, the

Position has some effect (deposition power)

Gold coating solution to further reduce the number of Be tube hits

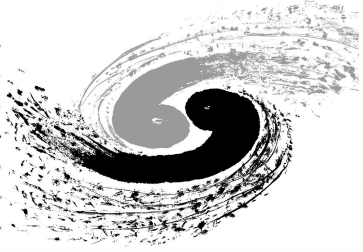
(474 to 59)



Data Comparison



option	photon number of hit Be(N)	Deposition power(W)
1.21-mask-Cu	1736.0	1.45*e-5
1.21-mask-W	1698.0	1.36*e-5
2.2-mask-Cu	1147.0	0.94*e-5
cons-no mask-Cu	257364.0	206*e-5
cons-no mask-W	148030.0	99.7*e-5
1.21-mask-Cu-5 μ mAu	216.0	0.273*e-5
nomask	39400.0	30.57*e-5



Thank you