Exercise (ILC Introduction)

- Undulator scheme requires very high energy electron to create positron
- Radiation from a helical undulator has a photon energy spectrum as shown.
- The wavelength of the first harmonics is

$$\lambda = \frac{\lambda_w}{2\gamma^2} \left(1 + K^2 \right)$$

- λ_w : wiggler pitch
- γ : electron Lorentz factor
- *K* : wiggler parameter



 E_{γ} (MeV)

- ILC adopts λ_w =11.5mm, K=0.92 with electron energy 125GeV
- Problems
 - Calculate λ
 - Convert it to the photon energy