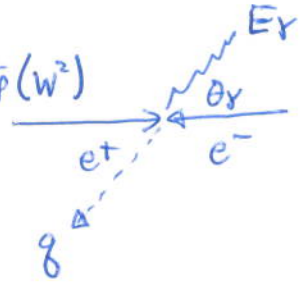
ISR

See Bytev et al PR D 84 (2011) 017 301

$e^+e^- \to \bar{N} N \gamma$

$$\frac{d^2\sigma_{e^+e^-\to p\bar{p}\gamma}(w)}{dw\, d\cos\theta_\gamma} = \frac{2w}{s} W(s, x, \theta_\gamma)\, \sigma_{p\bar{p}}(w^2)$$



$$x = \frac{2E_\gamma}{\sqrt{s}} = 1 - \frac{w^2}{s}$$

$$\sigma_{p\bar{p}}(w^2) = \frac{4\pi\alpha^2\beta C}{3w^2}\left[|G_M(w^2)|^2 + \frac{2m_p^2}{w^2}|G_E(w^2)|^2\right]$$

$$|G_M| = \frac{\text{const}}{q^4 \ln^2(q^2/\Lambda^2)} \sim \frac{1}{q^4} \qquad W = \frac{\alpha}{\pi x}\left(\frac{2-2x+x^2}{\sin^2\theta_\gamma} - \frac{x^2}{2}\right)$$

$$E_\gamma = \frac{\sqrt{s}}{2} x \qquad W \sim \frac{1}{x} \qquad \sigma_{p\bar{p}} \sim \frac{1}{w^2}\left(\frac{1}{q^8}\right) \qquad q^2 \equiv w^2$$

$$\sim \frac{1}{w^{10}}$$

$$W\sigma_{p\bar{p}} \sim \frac{1}{x}\frac{1}{w^{10}}$$

But $1 - \frac{w^2}{s} = x \qquad (1-x) = \frac{w^2}{s} \qquad \therefore \frac{1}{w^2} \sim \frac{1}{1-x}$

$$\boxed{W\sigma_{p\bar{p}} \sim \frac{1}{x}\frac{1}{(1-x)^5}}$$

$\therefore E_\gamma = \frac{\sqrt{s}}{2} x$ is peaked strongly at $x = 1$ or $E_\gamma = \frac{\sqrt{s}}{2}$