

$$P(E) = \int_{E_1}^E \frac{dE}{E^4} = \left[\frac{1}{-3E^3} \right]_{E_1}^{E_2} = \frac{1}{3} \left(\frac{1}{E_1^3} - \frac{1}{E^3} \right)$$

$$P(E_1) = P(1.0 \text{ GeV}) = 0$$

$$P(E_2) = P(20.0 \text{ GeV}) = \frac{1}{3} \left(1 - \frac{1}{20^3} \right) = 0.33329$$

$$\therefore E = \left(1 - 3 * \text{Rand01} * P(20) \right)^{-1/3}$$

