



A single point source generates earthquakes of magnitude $M=7$ at a rate of $NM_{min}=2$ events per year. Use the Sadigh et al. 1997 GMM (strike-slip) with a standard deviation equal to zero to compute the seismic hazard curve for $Sa(T=0.001)$ at a rock site located 100 km from the hypocenter.

Evaluating Sadigh et al 1997 at $T=0.001$ s leads to

$$\ln Sa(0.001) = -1.274 + 1.1M - 2.1 \ln(R + \exp(-0.485 + 0.5240M)) = -3.6988$$

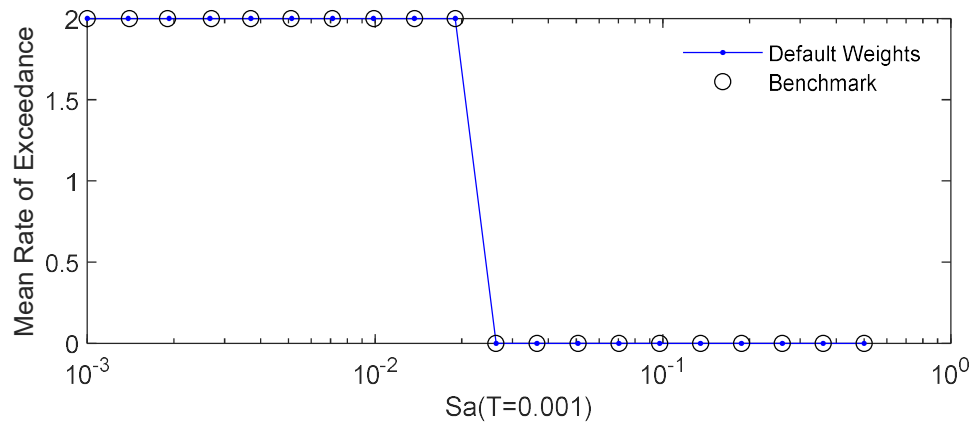
$$Sa(0.001) = \exp(-3.698) = 0.0248 g$$

$$\sigma = 0$$

With $f_M(m) = \delta(m - 7)$ and $f_R(r) = \delta(r - 100)$, the hazard integral is

$$\lambda_y = NM_{min} \int P(Sa > y|m, r) f_M(m) f_R(r) dm dr = NM_{min} P(Sa > y|m = 7, r = 100)$$

$$\lambda_y = 2 \cdot \begin{cases} 1 & \text{if } y \leq 0.0248 \\ 0 & \text{if } y > 0.0248 \end{cases}$$





Deaggregation for
Sa (T=0.001)
Hazard Level = 1.000e+00
Return Period = 19900 yr

Mean Distance and Magnitude:
R = 100 km
M = 7

