Expected Dose for Seismic GM Scenario Class A_{SG}: $[0, 2 \times 10^4$ yr] *(Primary source: WIS-MD-PA-000005 REV 00 AD 01 Sect. J8)*

Formal representation and approximation conditional on fixed $\mathbf{e}=[\mathbf{e}_A,\mathbf{e}_M]$

$\lambda_1 = \lambda_1(\mathbf{e})$ occurrence rate first damaging event

$\lambda_2 = \lambda_2(\mathbf{e})$ occurrence rate subsequent damaging events

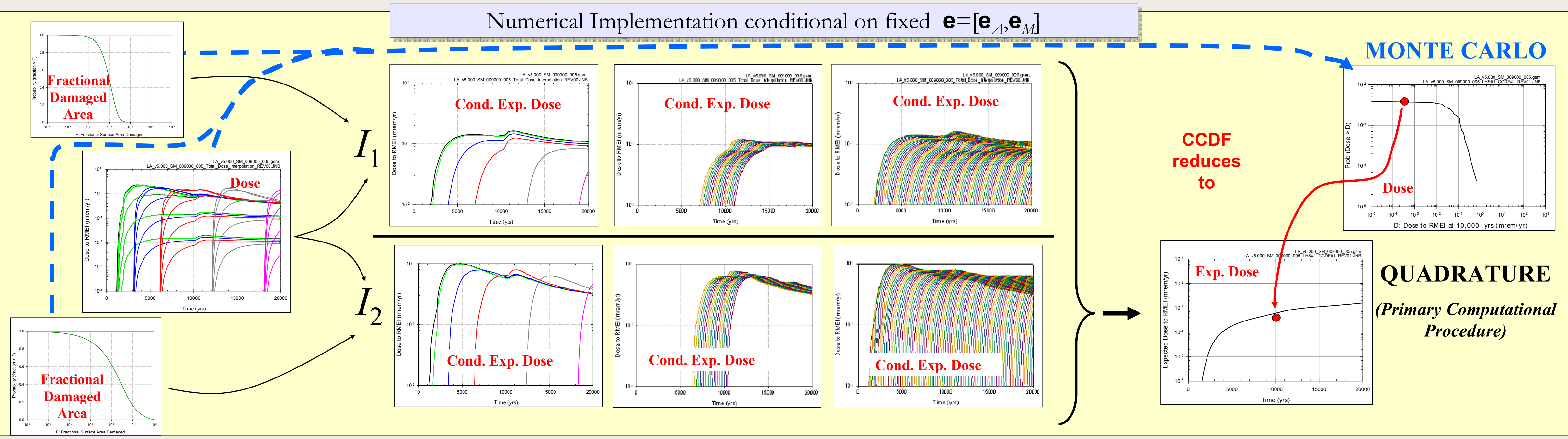
$$E_A[D_{SG}(\tau \mid \mathbf{a},\mathbf{e}_M) \mid \mathbf{e}_A] = \int_{\mathcal{A}_{SG}} D_{SG}(\tau \mid \mathbf{a},\mathbf{e}_M)\, d_A(\mathbf{a} \mid \mathbf{e}_A)\, dA \cong \begin{cases} p(A_{SG} \mid \mathbf{e}_A) \sum_{i=1}^{n} D_{SG}(\tau \mid \mathbf{a}_i,\mathbf{e}_M)/n \quad \mathbf{a}_i \text{ sampled from } \mathcal{A}_{SG} \text{ consistent with } d_A(\mathbf{a} \mid \mathbf{e}_A) & \text{MONTE CARLO} \\ \sum_{j=1}^{n} \underbrace{\{\exp(-\lambda_1 t_j)\lambda_1 \Delta t_j\}}_{\text{Prob. first dam. event in } [t_{j-1},\, t_j]} \Big\{ \underbrace{I_1(\tau \mid t_j,\mathbf{e})}_{\text{Exp. dose at time } \tau \text{ from first dam. event at } t_j} + \underbrace{\sum_{k=j+1}^{n} I_2(\tau \mid t_k,\mathbf{e})\lambda_2 \Delta t_k}_{\text{Exp. dose at time } \tau \text{ resulting from dam. events subsequent to first event at } t_j} \Big\} & \text{Quadrature with } 0=t_0<t_1<\ldots<t_n=\tau \end{cases}$$

Time damaging event

Fractional Area Damaged

$\mathbf{a}_{SG} = [nSG, t_1, A_1, t_2, A_2, \cdots, t_{nSG}, A_{nSG}]$ CDSP WPs only for $[0, 2\times10^4\ yr]$

Numerical Implementation conditional on fixed $\mathbf{e}=[\mathbf{e}_A,\mathbf{e}_M]$



Numerical Implementation including uncertainty in $\mathbf{e}=[\mathbf{e}_A,\mathbf{e}_M]$

(Based on LHS of size 300 from $\mathcal{E}$ consistent with $d_E(\mathbf{e})$)