

# Supplemental Material

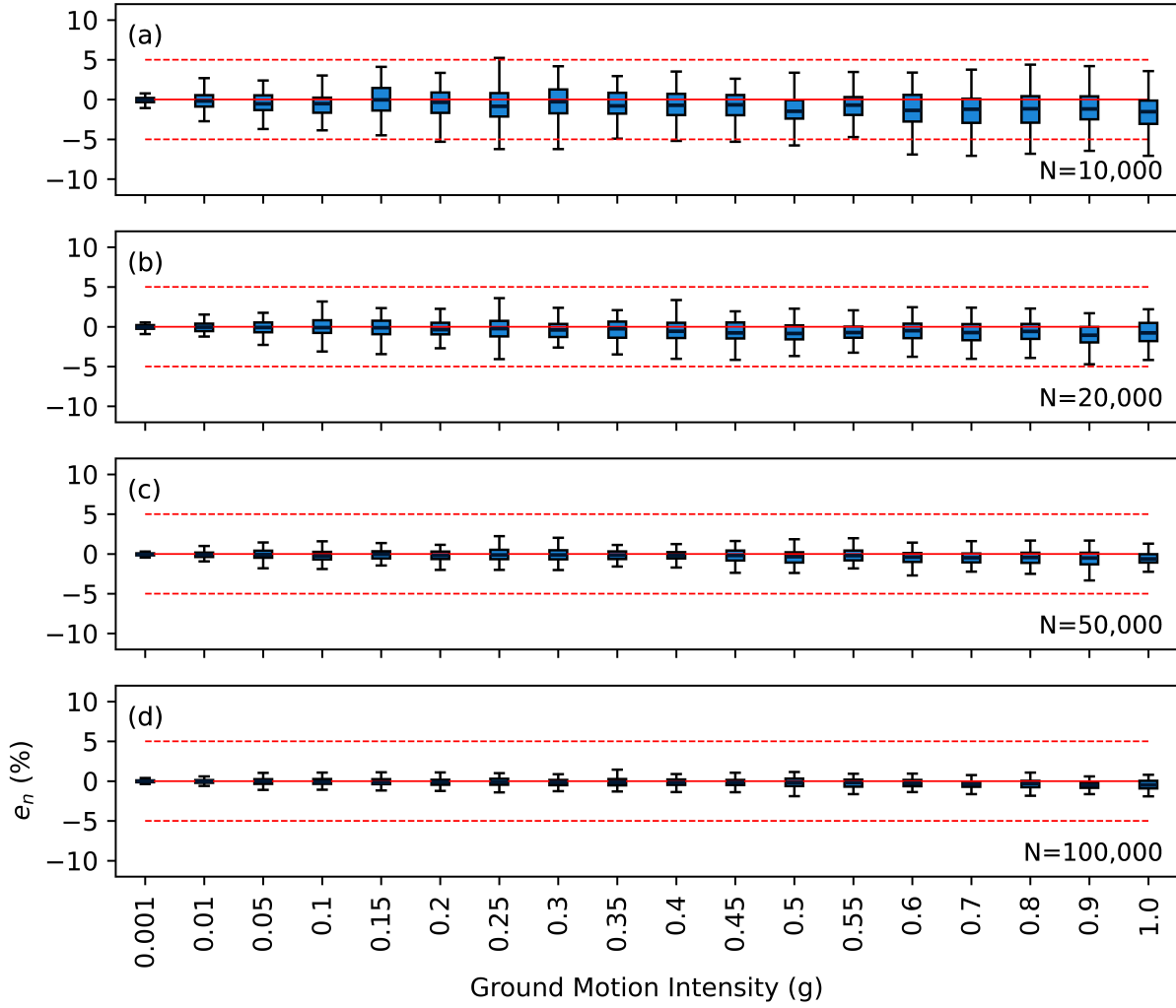
## Fast Probabilistic Seismic Hazard Analysis through Adaptive Importance Sampling

Soung Eil Houng and Luis Ceferino

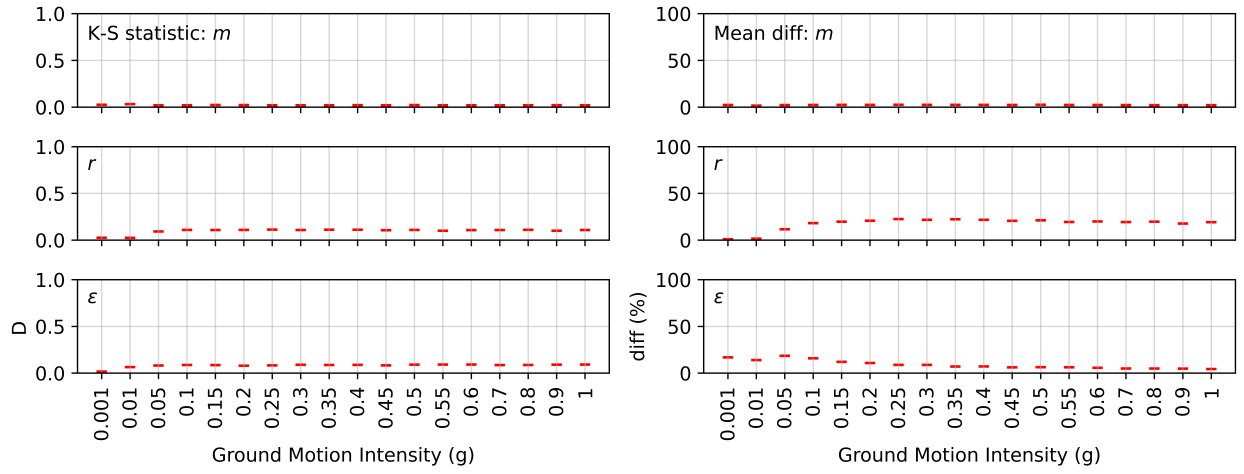
### List of Supplemental Figure Captions

This supplementary document includes 6 Figures, all of which are referenced in the main document.

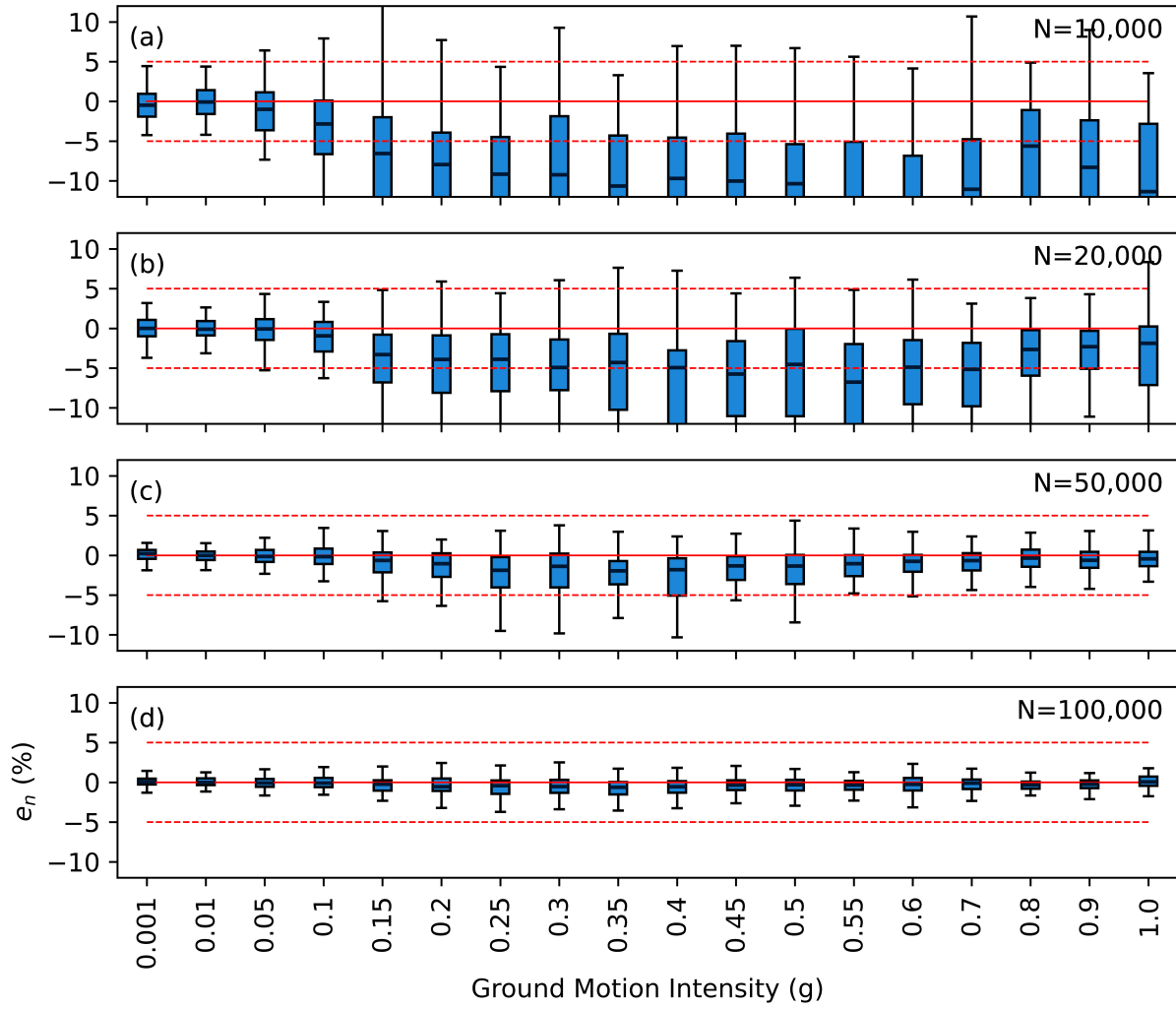
- **Figure S1** Areal Source Example: Box plot showing the distribution of AIS MC estimates with different number of samples. Each box is generated using the statistics of a hundred MC estimates. The x-axis is the ground motion, and y-axis is the error to the benchmark PSHA curve, the relative difference with respect to the "true hazard" computed using Riemann sum. The boxes represent the first and third quartile boundaries, and whiskers indicates the 1.5 times interquartile ranges. Red dotted horizontal line indicates acceptable error range, 5 %.
- **Figure S2** Areal Source Example: Kolmogorov–Smirnov D statistic and Mean difference between the hazard deaggregation and the proposed optimal density.
- **Figure S3** Fault Source Example: Box plot showing the distribution of AIS MC estimates with different number of samples.
- **Figure S4** Fault Source Example: Kolmogorov–Smirnov D statistic and mean difference between the hazard deaggregation and the proposed optimal density.
- **Figure S5** Combined Sources Example: Box plot showing the distribution of Full AIS MC estimates with different number of samples.
- **Figure S6** Combined Sources Example: Box plot showing the distribution of Partial AIS MC estimates with different number of samples.



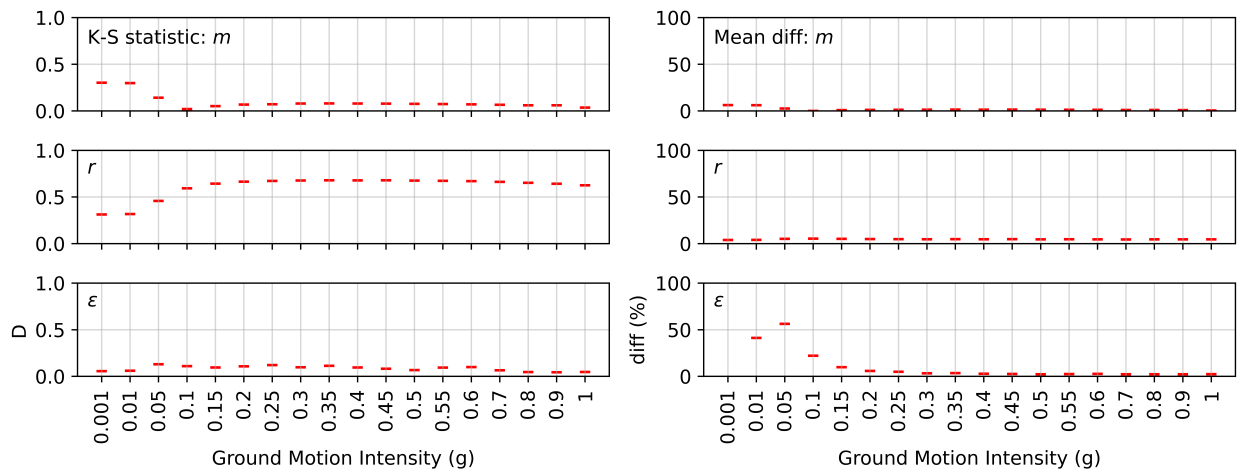
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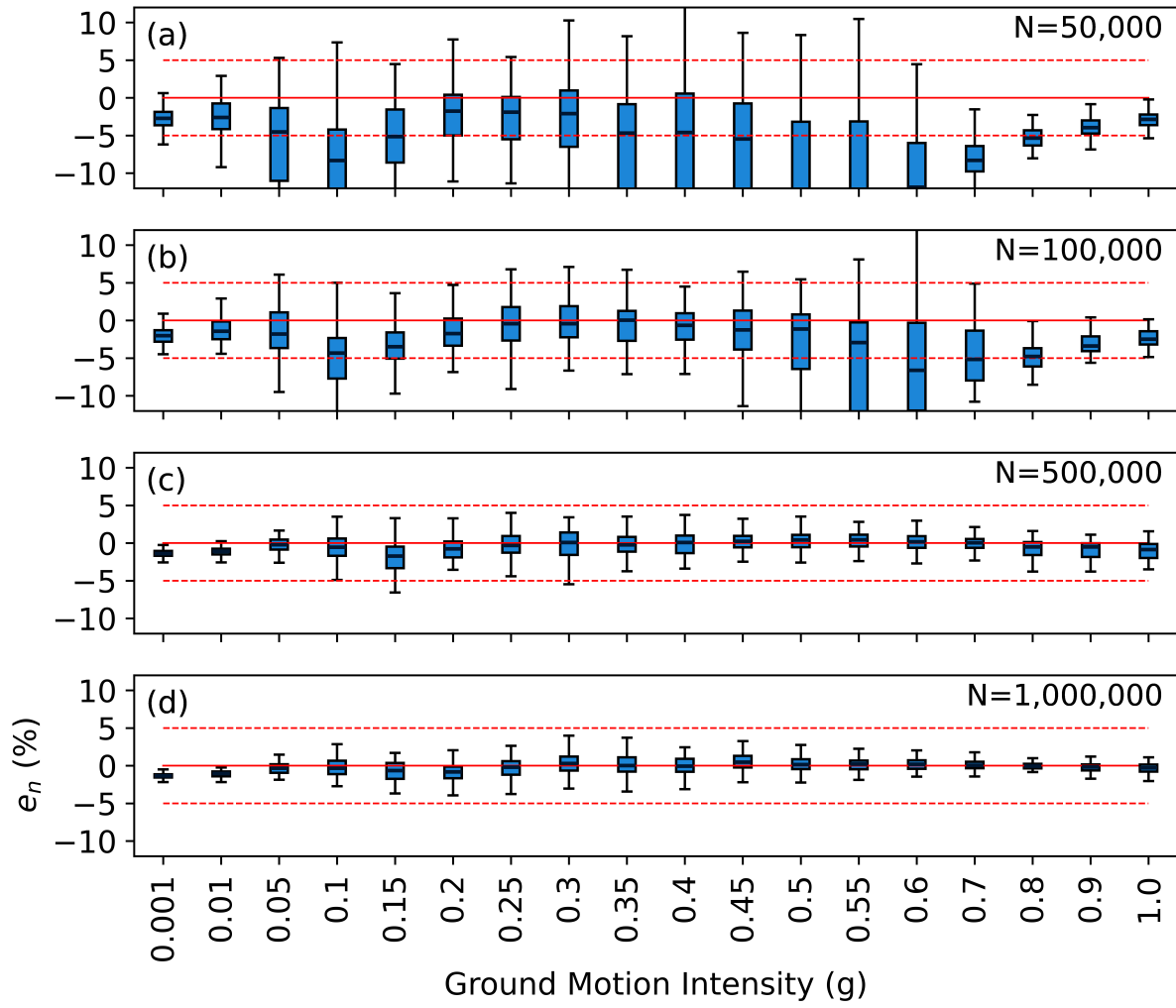
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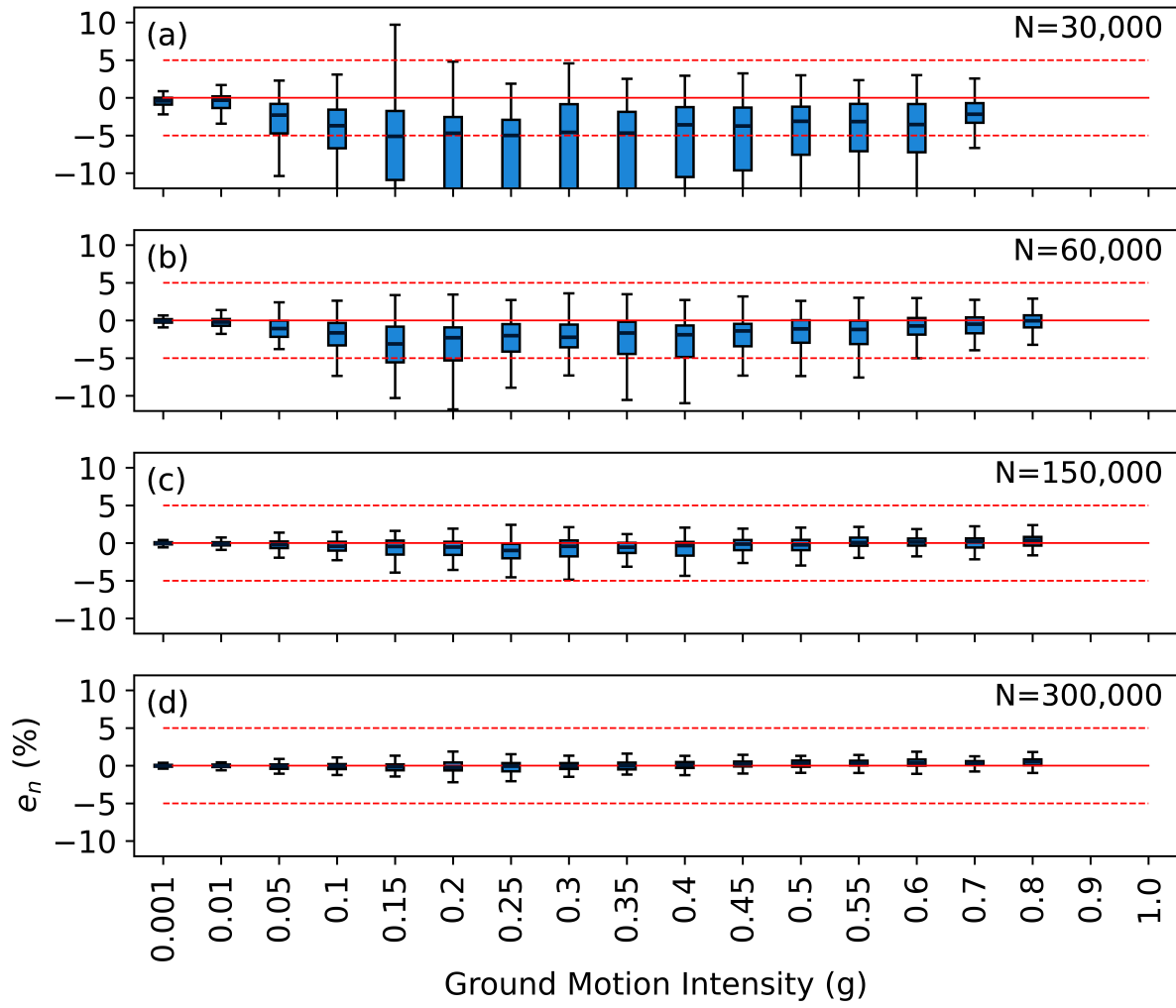
**Figure S3.** Fault Source Example: Box plot showing the distribution of AIS MC estimates with different number of samples.



**Figure S4.** Fault Source Example: Kolmogorov–Smirnov D statistic and mean difference between the hazard deaggregation and the proposed optimal density.



**Figure S5.** Combined Sources Example: Box plot showing the distribution of Full AIS MC estimates with different number of samples.



**Figure S6.** Combined Sources Example: Box plot showing the distribution of Partial AIS MC estimates with different number of samples.