Demonstration Broadband Platform (BBP) Ground Motion (GM) Sets for Tall Building Response Analyses – SCEC 2/16/2018 Workshop

PI’s: G. Deierlein, T. Lin
Students: K. Zhong, W-Y Yen, N. Bijelic

GM Database: SCEC BBP 17.3 (GP sim. by R. Graves)

<table>
<thead>
<tr>
<th>Seismic Source</th>
<th>No. of GM’s</th>
<th>Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern San Andreas (M 8.0)</td>
<td>1152</td>
<td>8029-RIN</td>
</tr>
<tr>
<td>Hayward (M 7.0)</td>
<td>576</td>
<td>8029-RIN</td>
</tr>
<tr>
<td>Elysian Park (M 6.6)</td>
<td>704</td>
<td>LADT</td>
</tr>
<tr>
<td>Southern San Andreas (M 7.9)</td>
<td>352</td>
<td>LADT/S688</td>
</tr>
<tr>
<td>San Jacinto (M 7.8)</td>
<td>1408</td>
<td>S688</td>
</tr>
</tbody>
</table>

SFDT (8029-RIN) scenario simulations (courtesy of N. Luco, S. Rezaeian, R. Graves, C. Goulet, F. Silva, & P. Maechling)

GM Selection: per ASCE 7-16 spectra*

- 11 GM’s
- Mean Sa>=target response spectra over 0.2-1.5$T_1$
- Consistent M, R, & mechanism; site condition etc.

- Buildings:
  - 20-story RC frame, $T_1 \sim 3$ sec
  - 42-story RC shear wall, $T_1 \sim 5$ sec

- Sites:
  - San Francisco Downtown (8029-RIN: 37.786 N, 122.391 W, Vs30 = 873 m/s)
  - Los Angeles Downtown (LADT: 34.052 N, 118.257 W, Vs30 = 390 m/s)
  - San Bernardino (S688: 34.104 N, 117.288 W, Vs30 = 280 m/s)

- Intensity Levels:
  - 10% in 50 years “DBE”
  - 2% in 50 years “MCE”