



# “Which Way PRA?” Workshop

Pre-PSAM 14 Workshop

September 16<sup>th</sup>, 2018

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## Which way SPRA?

This year marks the 50th anniversary of the publication of C. Allin Cornell's paper, "Engineering Seismic Risk Analysis". Of this, everyone in the PSAM community is well aware as it provided us with the foundations for PSHA.

What is less well known is that this year marks the 49th anniversary of Dr. Cornell's paper, "A Probability-Based Structural Code" which forms the foundation of modern fragility analysis.

The two papers created the PRA approach to earthquake analysis.

Now fifty years is a long time and the way we do earthquake PRA has essentially not changed ... but neither has the way we make Coq au Vin.

Should we re-evaluate how we do PSHA and fragility analysis? The Chuetsu Oki earthquake in 2007 and the Great Eastern Japan earthquake in 2011 inflicted no damage to nuclear power plants, so perhaps our estimates of vulnerability are too conservative.

Also, the belief that we can characterize our uncertainties in a rigorous, probabilistic, scientific manner (which is the basis of PSHA and fragility analysis) has come under well-reasoned skepticism (see "Why is Probabilistic Seismic Hazard Analysis (PSHA) still used?" Mulargia, Stark, and Geller [2016]). In their article, the authors show that PSHA rests on assumptions now known to conflict with earthquake physics; many damaging earthquakes, including the 1988 Spitak, Armenia event and the 2011 Tohoku, Japan event, have occurred in regions relatively rated low-risk by PSHA hazard maps.

The time has come to enter a lively conversation, both from the academic side and the practitioner side. In this workshop, we invite participants to present their points of view, to listen, to speak, and to push the state-of-the-art of earthquake analysis into the future. As Benjamin Franklin wrote in his autobiography, the conversation should be "conducted in the sincere spirit of inquiry after truth, without fondness for dispute, or desire for victory."

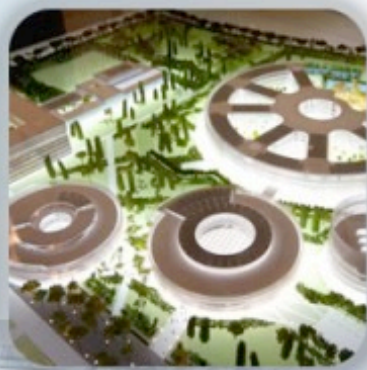
The results of the half-day workshop (<http://psam14.org/Program-Tech-workshops-2.html>) will be presented to the PSAM 14 community as a panel discussion on the first day of the conference, Monday, September 17<sup>th</sup>.

If you would like to participate in the workshop, please send an eMail to Woody Epstein at [woody@ars-corp.net](mailto:woody@ars-corp.net). Also, please indicate if you would like to make a presentation.

**Time:** Sunday, September 16<sup>th</sup>, 13:00 to 17:30

**Place:** Illumination Room, UCLA Luskin Conference Center

Order	Name	Affiliation
1	Ravi Ravindra	Consultant
2	Eddie Guerra	Arup
3	Andrii Nykyforchyn	KKG
4	Fernando Ferrante	EPRI
5	Tunc Aldemir	OSU
6	Sam Swan	Consultant
7	Norm Abrahamson	Berkeley
8	Elisabeth Paté-Cornell	Stanford
9	Philip Stark	Berkeley
10	Don Wakefield	ABS
11	Tom Heaton	Cal Tech
12	Yamauchi	Todai
When he comes in	Bob Budnitz	L. Berkeley Lab



*EDF-Lab Paris Saclay - 5,6,7 December 2018*

## **Workshop on Evaluating Probabilistic Seismic Hazard Analysis based on Observations**

Hosted by the Government of France through Électricité de France (EDF)

