SUSTech Southern University of Science and Technology

RISKS-X 风险分析预测与管控研究院

MEGAQUAKE PHYSICS

MODELING THE OCCURRENCE OF THE HIDDEN GIANTS

> “Only by deciphering the emergent physics of fault systems can we prepare for events we hope never occur, but geology decrees must, and history warns sooner or later will.”

MEGAQUAKE PHYSICS

MODELING THE OCCURRENCE OF THE HIDDEN GIANTS

July 24, 11.00 AM - Room AT.02, DISTAV – University of Genova

Probabilistic seismic hazard assessment relies on the principle that earthquakes follow predictable size distributions, with the largest quakes limited by structural and geodetic constraints. Nevertheless, some most devastating earthquakes, like in Japan in 2011, transcend these rules, recalling us how weak our present understanding of earthquake physics is.

My research activity focuses on the modelling of the emergent physics of faults in the attempt to bridge earthquake mechanics, statistical physics and seismology. Specifically, my recent works investigate the physical dynamics promoting the occurrence of large earthquakes.

In my presentation, I will discuss recent theoretical advances in our comprehension of megaquake physics; moreover, I will introduce a physical mechanism explaining heavy-tailed distributions of large quakes which increase the likelihood of mega events by order of magnitudes with respect to standard models. My attempt aims to reconcile long-standing discrepancies between geodetic measurements, paleoseismic evidence and seismic catalogues.

DAVIDE ZACCAGNINO

I am a postdoctoral researcher working at the Institute of Risk Analysis, Prediction and Management (Risks-X) at the Southern University of Science and Technology (SUSTech) in the futuristic atmosphere of Shenzhen, China. I specialize in seismic hazard analysis, with a focus on the physics of extreme seismic events under the mentorship of Prof. Didier Sornette. My work aims to connect statistical seismology, earthquake physics and statistical mechanics, towards physics-based seismic hazard assessment.