Workshop Program on Strong Motion Studies and their Application 2023 and Full-Scale Report of the Investigations in the Sophisticated Earthquake Risk Evaluation Laboratory during 2018-2023

Venue: Obaku Plaza, Kihada Hall on March 21

Obaku Plaza, Seminar Room 4 and 5 on March 22

Day1: March 21, 2024

Session-1 Chair: Hiroshi Kawase

0900~0915 Introduction of the workshop by Hiroshi Kawase

0915~1000 Facts learned from the fault rupture models for inland earthquakes and future perspective by Tomotaka Iwata (DPRI, Kyoto Univ.)

1000~1045 Characterized source model for the 2023 Mw7.8 Turkey earthquake based on the observed strong motions by Toshimi Satoh (Shimizu Corporation)

1045~1130 Prediction of long-period ground motions and its remaining issues based on the investigations on recent damaging earthquakes including the 2023 Turkey-Syria earthquake by Yoshiaki Hisada (Kogakuin Univ.)

1130~1215 Slip modeling in shallow areas above the seismogenic zone for inland crustal earthquakes by Ken Miyakoshi (Ohsaki Research Institute)

Lunch break

Session-2 Chair: Fumiaki Nagashima

1315~1345 The scaling relationships for inland and subduction-zone earthquakes based on the inverted fault parameters collected in SRCMOD by Fumiaki Nagashima (Formerly SERE laboratory)

1345~1415 Large subduction-zone earthquake simulation based on the statistical Green’s function method considering the amplitude and envelope spectra by Kenichi Nakano (HAZAMA-ANDO CORP., collaborated with SERE laboratory)

1415~1445 Construction of complex source characteristics based on the damage statistics during the 1944 Tonankai earthquake by Eri Ito (SERE laboratory)

Coffee break

Session-3 Chair: Kenichi Nakano

1500~1530 Empirical modification approach to extract nonlinearity from observed earthquake horizontal-to-vertical spectral ratios with high peak ground accelerations by Ziqian Wang (SERE laboratory) (English)

1530~1600 Dynamic rupture simulation for the 2016 Kumamoto earthquake by Jikai Sun (SERE laboratory) (English)

1600~1630 Real mechanism of the high-frequency radiation from the source implied from the dynamic rupture simulations: A novel hypothesis by Hiroshi Kawase (SERE laboratory)

1630~1730 Discussion on the presented results (MC: Hiroshi Kawase)

1800~2000 Informal discussion at Restaurant Kihada (1,000 yen per person)

Day2: March 22, 2024

Session-4 Eri Ito

0900~0930 Application and validation of the EHVR velocity inversion technique for relatively stiff sites based on the diffuse field concept by Fumiaki Nagashima (SERE laboratory)

0930~1000 Proposal of vertical amplification correction function (VACF) to obtain horizontal site amplification factor from observed earthquake horizontal-to-vertical spectral ratio by Eri Ito (SERE laboratory)

1000~1030 New way to obtain bedrock motions and nonlinear site amplifications from observed strong motions based on the diffuse field concept by Fumiaki Nagashima (Formerly SERE laboratory)

1030~1100 Simulations of both observed strong motions and subsequent structural damages in downtown Mashiki during the 2016 Kumamoto earthquake by Jikai Sun (SERE laboratory) (English)

1100~1130 Direct S-wave velocity inversion from the site amplification factors separated by GIT by Ziqian Wang (SERE laboratory) (English)

1130~1215 Directional dependence of microtremor horizontal-to-vertical spectral ratios found in Dawan lowland of Tainan City by Shinichi Matsushima (DPRI, Kyoto Univ.)

Lunch break

Session-5 Chair: Jikai Sun

1315~1345 Modeling of the whole wave-to-S wave spectral ratios (WSR) in the statistical Green’s function method based on GIT by Kenichi Nakano (HAZAM-ANDO CORP., collaborated with SERE laboratory)

1345~1400 Earthquake horizontal-to-vertical spectral ratios (EHVR) and horizontal and vertical site amplification factors (HSAF & VSAF\*) for the whole wave and S-wave part from GIT by Hiroshi Kawase (SERE laboratory)

1400~1430 International applications of the EHVR velocity inversion method based on DFC by Hiroshi Kawase (SERE laboratory)

1430~1445 Characteristics of the slip velocity function and high slip-velocity area (HSVA) based on the dynamic rupture simulation by Hiroshi Kawase (SERE laboratory)

Coffee break

Session-6 Chair: Ziqian Wang

1500~1530 Microtremor observation and strong motion reproduction in Antakya City, Turkey, during the 2023 Southeastern Turkey earthquake by Jikai Sun (SERE laboratory) (English)

1530~1600 Strong ground motions and site amplifications in relation to the structural damage ratios during the 2024 Noto earthquake by Hiroshi Kawase (SERE laboratory)

1600~1645 Revisited kinematic source inversions with SMGAs for inland earthquakes in the past in Japan: Kumamoto and Kobe cases by Anatoly Petukhin (GRI Foundation, collaborated with SERE laboratory) (English)

1645~1725 Discussion on the future perspective (MC: Hiroshi Kawase)

1725~1730 Closing address by Hiroshi Kawase

Note: All invited speakers will have 30 minutes presentation and 15 minutes discussion, while those from the SERE laboratory (past and present) will have 20 minutes presentation and 10 minutes discussion, except for a couple of presentations.