Geophysical Research Abstracts
Vol. 18, EGU2016-16273-1, 2016
EGU General Assembly 2016

Experimental study of permanent displacement estimate method based on strong-motion earthquake accelerograms

Tao Lu (1) and Guorui Hu (2)

(1) Department of Earthquake Engineering, Institute of Disaster Prevention,Peking,P.R.China (lutao@cidp.edu.cn), (2) Department of Earthquake Engineering, Institute of Disaster Prevention,Peking,P.R.China (cidphgr@163.com)

In the engineering seismology studies, the seismic permanent displacement of the near-fault site is often obtained by the process of the ground motion accelerogram recorded by the instrument on the station. Because of the selection differences of the estimate methods and the algorithm parameters, the strongly different results of the permanent displacement is gotten often. And the reliability of the methods has not only been proved in fact, but also the selection of the algorithm parameters has to be carefully considered.
In order to solve this problem, the experimental study on the permanent displacement according to the accelerogram was carried out with the experiment program of using the large shaking table and the sliding mechanism in the earthquake engineering laboratory. In the experiments,the large shaking table genarated the dynamincs excitation without the permanent displacement,the sliding mechanism fixed on the shaking table genarated the permanent displacement, and the accelerogram including the permant information had been recorded by the instrument on the sliding mechanism.Then the permanent displacement value had been obtained according to the accelerogram, and been compared with the displacement value gotten by the displacement meter and the digital close range photogrammetry.
The experimental study showed that the reliable permanent displacement could be obtained by the existing processing method under the simple laboratory conditions with the preconditions of the algorithm parameters selection carefully.