

## **LURR and its new progress**

Yin, X C<sup>(1,2,3)</sup>, Yuan, S<sup>(2)</sup>, Zhang, L P<sup>(1,2)</sup> and Liu, Y<sup>(2)</sup>

(1) Institute of Earthquake Science, China Earthquake Administration (CEA),  
Beijing, China

email xcyin@public.bta.net.cn

(2) LNM (State Key Laboratory of Nonlinear Mechanics), Institute of Mechanics,  
Chinese Academy Sciences (CAS), Beijing, China

(3) Institute of Geophysics, CEA, Beijing, China

The motivation, basic ideas of LURR (Load-Unload Response Ratio) and the earthquake prediction status using LURR have been introduced briefly in this paper. Especially the new progresses of LURR have been described in detail including the evolution law of LURR before strong earthquake and the application of dimensional method. The results of the four methods (experiment, numerical simulation, analytical and the real seismic data ) come to a consistent conclusion that at the early stage of seismic period LURR fluctuate around 1, then it rise swiftly and to its peak point (abbreviated pp). The catastrophic events do not happen at the peak point, but after it, namely the catastrophic events lag behind the point PP. The evolution law of LURR have great importance on actual earthquake prediction, since we can predict the occurrence time quantitatively (by scale of months) if we can make sure the time of the point PP. Above all, the variation of LURR could depict clearly the seismogenic process, and it offers more clear ideas and methods to earthquake prediction.