



Energy release rate of aftershocks

A. Marcellini and R. Daminelli

Istituto per la dinamica dei processi ambientali-CNR, Milano, Italy (alberto.marcellini@idpa.cnr.it)

Nevertheless the impressive amount of researches and experiments, the physics of fracture is still partially unknown. This constitutes a severe limit to the application of models based on lab results to earthquake phenomena and, at the same time, is an explanation of the large number of approaches adopted. In the present work we analyzed the temporal behaviour of seismic energy released by aftershock sequences with a kinetic approach based on static fatigue that has proven to be confirmed by lab data. Basically the model assumes that a fracture is governed by two competing mechanisms, that is, 1-breakage of unbroken elements and 2-reformation of broken elements. Both phenomena consider Arrhenius-type relations between applied stress and time to fracture. The model has been applied to selected aftershock sequences from SCEC Catalogue. The predicted results, in terms of aftershock energy release versus time fit quite well the data in the time window considered (120 days since the mainshock).