

A method of assessing a risk of high-energy earth bursts generated by underground mining comprises the steps of simultaneous, and in close temporal and spatial coincidence, measurements of vibration (E^{PomI}) on the surface with the 3-axis vibration sensors (4), measurements of the underground burst parameters ($E^{PO^{mII}}$) with a mine system for location of seismic bursts (12), measurements of displacement (U^{pom}) on the surface with the 3-axis displacement sensors (9), adjusted periodically with a tachymetric measurement set (B), and recording of these measurements in the measurement data repositories (17) of an analytical microprocessor (2a). Then the sets of these measurements are processed in the analytical microprocessor (2a) and a high-energy burst hazard in time-space is predicted by estimation of critical phenomena taking into account the combination of observations in the form of quasi-deterministic and spatio-temporally extensive process of the rock mass deformation, and paraseismic phenomena in the form of short-term vibrations of particles of the rock mass in the domains of time and frequency. Their combined impact is a functional over the locally summated space. An appropriate system is carry out the above method is also disclosed.