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Magnetoelectric electrode gage - a technique for studying shock compression and matter metallization¹ SERGEY GILEV, Lavrentvev Institute of Hydrodynamics, Siberian Division of Russian Academy of Sciences, Novosibirsk, Russia — To study a material, which becomes conductive under compression, we use a new gage of mass velocity. Moving conductive matter generates emf at an electric circuit in transverse magnetic field. Voltage across the electrodes is determined by mean mass velocity at electromagnetic skin-layer in matter behind shock front. Layer thickness depends severely on the electric conductivity of shocked matter and is about 0.1-10 mm for materials investigated. A probing layer travels through the matter with shock velocity giving information on mass velocity under shock wave movement. Unlike the known techniques, the new instrument is Euler gage of mass velocity. Much electrode system allows one to obtain shock velocity at varied spatial bases. This technique is used to build Hugoniot of selenium and aluminum of different density. Experimental data are presented as dependencies of shock velocity on mass one. Thickness of probing layer for coarse powder is about shock transition thickness. This opens up possibilities using the technique for studying structure of shock transition and phase of matter metallization.

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