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Features of the Shock and Detonation Waves in Cylindrical Explosive Compaction JOSE RIBEIRO, RICARDO MENDES, IGOR PLAKSIN, JOSE CAMPOS, Mechanical Engineering Department - University of Coimbra —

It is believed that many of the essential features of the explosive compaction process are due to the micromechanical behaviour of the powder. However, despite of the significant amount of the work done in the area, there is a considerable lack of experimental data obtained at a suitable length scale to be used in the increase of the knowledge of the referred behaviour; moreover, many of the attempts made to overcome this problem were done in conditions far way from the ones used in real compaction experiments. To fill that gap is necessary to perform the characterization of both, the compaction and the detonation waves, in conditions close to the ones used in real experiments and with a spatial resolution approaching the characteristic size of the powder. Using a standard experimental technique developed at our laboratory - LEDAP, based on the used of a 64 channels optical fiber strip connected to a electronic streak camera, spatial and temporal resolved details of the compaction and detonation waves shape and intensity, were obtained and are presented. The results refer to a cylindrical configuration set-up and alumina powder, several values of the E/M relation and two characteristic sizes of the powder particles.

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