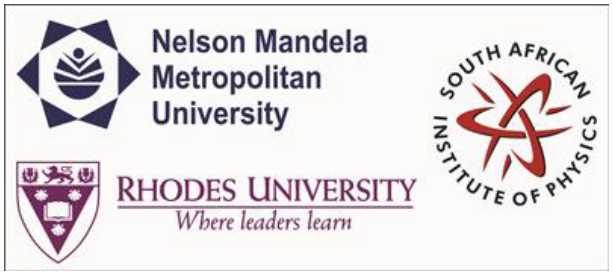

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Determination of the Origin of a High Frequency Signal Superimposed on the Light Emission detected from a Detonating Explosive in a Free Environment

Wednesday, 1 July 2015 16:10 (1h 50m)

Abstract content
   (Max 300 words)
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The intense light flash emitting from a detonating explosive charge has been the subject of a number of experimental investigations. Optical detectors were employed to capture such emitted light. However, during these studies, a high frequency oscillation was observed superimposed on most of the measured signals. The origin of this high frequency oscillation observed is of interest since it could be possible that it can be an intrinsic property of detonations and the post detonation behavior of the explosive products. Alternatively, it could be an artefact of the measuring methodology.

To study the origin of this oscillation Comp B explosive charges were used with varying mass. EMI screening aids and procedures were undertaken to characterize this oscillation during dynamic and static tests measurements. Mathematical and digital signal processing tools were used to analyze the measured signals in order to investigate the origin of the high frequency oscillation.

During the study, it emerged that the light emitted from the detonation event is linked to the problem under investigation. It is thought that the optical devices detect light rays which are affected/disturbed by turbulence through index of refraction variations during explosion of a detonating charge and record them as a high frequency oscillation.

Key words: High frequency oscillation, explosive charge, detonation, EMI screening, light emission

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