

Abstract Submitted
for the SHOCK13 Meeting of
The American Physical Society

Methods for processing experimental data in microwave diagnostics of shock waves and detonation ALEXANDER SEDOV, ALEXEY RODIONOV, RFNC-VNIIEF, Sarov, VLADIMIR KANAKOV, Lobachevsky NNSU, Nizhny Novgorod — Microwave interferometry is a promising method of unperturbing diagnostics of short-time processes. It is a bit less effective than the optical methods in accuracy, but it provides a researcher with more capabilities, in particular, for measurements in optically opaque media. The classic methods for processing experimental interferograms using extremums allow to obtain data on motion of investigated objects with the resolution of a quarter of wavelength of probing radiation. It is insufficient for majority of practical applications. Use of the mathematical methods for processing output signals of the receiver allows to improve the method resolution significantly and to obtain motion measurement errors of 0.05...0.1 of wavelength or even less. This paper presents schemes of conduction and brief description of the methods for processing a series of tests, which were performed in RFNC-VNIIEF with use of radio interferometer having length of wave of probing radiation $\lambda = 3.2$ mm, namely:

- to measure velocity of stationary detonation;
- to measure depth of detonation initiation by shock wave;
- to investigate shock compressibility of dielectric materials;
- to investigate dynamics of constructions.

Alexander Sedov
RFNC-VNIIEF, Sarov

Date submitted: 20 Feb 2013

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