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The analysis of the errors of the dynamic interferometry method in the control of local surface inhomogeneities of the nanometer level of the profiles of optical parts

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The method of dynamic interferometry for monitoring local deviations of the nanometer level of the surfaces of optical parts from a given profile has been developed, scientifically substantiated and experimentally confirmed, based on the algorithm for calculating the objective function - the spectral density of one-dimensional correlation function (PSCF1 from English. PSD (Power Spectral Density One Dimension)). Theoretical and experimental studies are presented on the determination of the standard deviation (RMSD) of local deviations of the surfaces of optical parts with a diameter of up to 100 mm and up to 1000 mm, taking into account the non-excluded systematic and random components of the errors in determining the objective function.

Keywords: optical control, interferometry, surface measurements, spectral density of the correlation function, analysis of systematic methodological and random errors, edge effect, frequency "leakage" effect.

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