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Investigation of the PSD of a Pseudo Random Binary Grating as a Standard Test Surface by Interference Microscopy and Angle Resolved Scattering

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A binary pseudo random grating designed to achieve a defined power spectral density (PSD) function is investigated by interference microscopy and an angular resolving scattering light instrument. The PSD of the standard sample is designed to show white noise process characteristics in roughness evaluation and to get information about the amplitude transfer function of the measuring instrument over a defined spatial frequency range. The measured data demonstrate that both instruments influence the slope of the PSD in the wavelength range above twice as much as the grating period (Nyquist wavelength) in different ways permitting conclusions about their filtering behavior.

Key words: Roughness, calibration standard, interference microscopy, angular resolved light scattering