2023/6/11 O.Sasaki

Signal processing in wavenumber and scanning distance domains of white-light interferometers

Constant term of linear fitted phase in wavenumber domain (CLPW) in white-light interferometers

Contents that need discussions and simulations.

These contents are indicated with blue color in the draft.

(1) Figs. 4, 5, 7 I am not sure if these figures are correct or not.

Fig. 4: Does A(z) have a maximum value at zo? Is the phase distribution correct?

Fig. 5: Does B(z) have a maximum value at za? Is the phase distribution correct?

Fig. 7: Does A(z) have a maximum value at za? Is the phase distribution correct?

It is better to confirm the above things by simulation.

First, please understand these figures, and please do simulations to get answers about the above questions.

(2) Relations between SRI and WLSI

I am not sure if the blue sentences are good or not.

(3) Elimination of noises by using linear square line

This part is very important.

Additive noises have been analyzed in the paper 1.

Is it better to show many least square lines at different additive noises in simulation?

Phase noise or multiplicative noise has been analyzed in the paper 2 as shown in Tables 2, 3, 4. But the rotations of least square lines at different phase noises have not been examined.

Anyway it is very important to explain why and how the zp value provides good measurement results.

And also, it is lucky that the weighted least square method using the distribution of IF(σ) provides more better results.

It is better to confirm the above things by simulations.

Please do the above contents by using simulations.

Paper 1.

“Accuracy improvement of surface measurement through phase correction in spectrally resolved interferometer”

Optics and Lasers in Engineering (2023)

Paper 2

“Exact surface profile measurement without subtracting dispersion phase through Fourier transform in a white-light scanning interferometer,” Appl. Opt. (2018).