

Temperature measurement by using Mach-Zehnder interferometer

Andi Muhammad Natsir Amal, author

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Abstrak

ABSTRACT

We proposed a method for measuring the temperature by using Mach - Zehnder Interferometer, one arms of Mach - Zehnder Interferometer was used as a test arms which was disturbed by an object, it's temperature was to be measured. In our experiment, we used a combustion flame and a heated welder with temperature variation as a testing object.

System, contains He - Ne laser source, two beams splatters and two mirrors which form two arms of interferometer, with a length of 1,06 meter.

The experiment results shows that the variation of temperature could give the difference of fringe spacing at the screen. Several photographs of fringe pattern on the screen have been successfully taken on both under temperature disturbance and normal condition.

The comparison between the fringe spacing under those two conditions could give the information about temperature of the testing objects.

This result was also compared with the measurement using thermocouple with digital display. This comparison gives us a good agreement.