
Topic 9: Holographic Interferometry

Aim

The lecture covers small displacement holographic interferometry including an overview of interferometric techniques. Fringe formation is considered for two exposure interferometry of a rigid body and time averaged holography of a vibrating object.

References

- Goodman, Chapter 9, page 373-378), (not much details, but some nice examples).
- Jones & Wykes, *Holographic and Speckle Interferometry*, Cambridge 1989 Chapter 2 (more than needed)

9 Holographic Interferometry

9.1 Types of Interferometry

State the three types of Holographic Interferometry discussed in lectures and suggest a practical application of each type.

9.2 Linear Position

A linear translation stage is reported to have a positional accuracy of $1\mu\text{m}$ over a 1 mm range. You have a $50 \times 50\text{mm}$ plate of aluminum with a 0.5 mm grid engraved on it which may be attached to the translation stage either parallel or perpendicular to its motion. Suggest a suitable holographic scheme to test the accuracy of this stage.