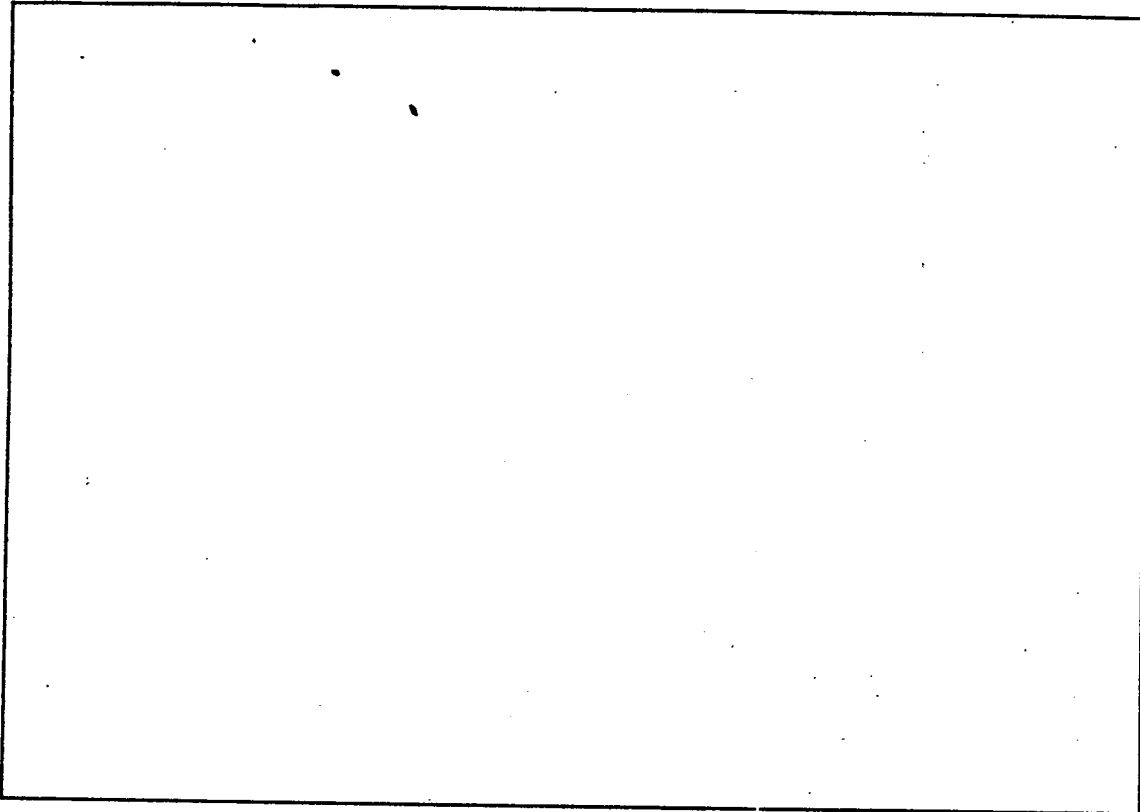


**SINGLE BEAM TRANSMISSION PSEUDO-ACHROMAT* HOLOGRAM
(for 4 by 5 inch Holograms on the EXPERIMENTAL TABLE)**



SKETCH THE SET UP IN THE BOX ABOVE

PARTS LIST

- | | | |
|--------------------------------|----|--------------------------|
| 1. LASER | | GOALPOST CONFIGURATION |
| 2. SHUTTER | | with TWO MAGNETIC BASES |
| 3. SPATIAL FILTER | | and RIGHT ANGLE CLAMPS |
| 4. 8 by 10" MIRROR in GOALPOST | 6& | 4 by 5" PLATEHOLDER |
| CONFIGURATION with TWO | 7. | ASSEMBLIES |
| MAGNETIC BASES and RIGHT | 8. | HALF-WAVE PLATE ASSEMBLY |
| ANGLE CLAMPS | 9. | BAFFLES |
| 5. 10 by 12" MIRROR in | | |

SET UP STEPS

Usually this set up is used almost immediately after making the **MASTER HOLOGRAM**, so there should be no need to reconfigure the mirrors and **SPATIAL FILTER**. (See the **HANDOUT, SINGLE BEAM**

*. Achromatic means without color; this image is black & white near the image plane. Pseudo distinguishes this hologram from the "true achromat" of Dr. Stephen Benton of MIT who produces the same result through a long and complicated process involving tilted masters and Holographic Optical Elements.

TRANSMISSION WITH MIRROR MASTER HOLOGRAM (for 4 by 5 inch Holograms on the EXPERIMENTAL TABLE), Steps 1 through 4 if starting from scratch.)

1. Remove from the **TABLE** and put away the **OBJECT** and **LITTLE JOKER** where they belong.
2. Roughly orient the **PLATEHOLDER ASSEMBLY** in the hot center of the spread beam at the farthest reaches of the table. For top-lit "landscape" format masters, which will be side-illuminated in this set up, angle the plateholder so that the side with the screws is facing toward the observer and the top of the U shape is angled toward the reference beam.
3. Find the Virtual Image in the **MASTER HOLOGRAM**. Put the master plate in the plateholder, and spin and flip the hologram through the four permutations until you find the image. Rotate the **PLATEHOLDER** until you get the brightest image, making sure that this plate is centered in the Bright Stuff.
4. Once the Virtual Image is found, then rotate the **MASTER HOLOGRAM** along the current vertical axis which puts the replay light into the hologram exactly backwards, so that the Real Image pops out.
5. Assemble the 5 by 7" **CONTACT FRAME PLATEHOLDER ASSEMBLY** between a couple of **MAGNETIC BASES** in the usual Goalpost Configuration. (This **HOLDER** can hold plates or film for Transmission Holograms.) Put a piece of 4 by 5" **GROUNDGLASS** in the **FILMHOLDER** and observe the focus of the Real Image while translating the **FILMHOLDER ASSEMBLY** toward and away from the **MASTER PLATEHOLDER ASSEMBLY**. It helps to block the light that misses the master that could hit the **GROUNDGLASS** as it clouds the Real Image. The height of the **COPY FILMHOLDER** should be adjusted to frame the image properly.
6. The stray light mentioned above is the **REFERENCE BEAM** for the Hologram. Make sure that the light missing the **MASTER PLATEHOLDER** covers the place where the **Copy Hologram** will be exposed. A well-exposed **Master's Image** will be visible under the Coherent Background.
7. Block **STRAY LIGHT**, especially any that might come from behind the **PLATEHOLDER** that could act as a second **REFERENCE BEAM!**
8. Insert the **HALF-WAVE PLATE ASSEMBLY (9)** after the **LASER (1)** but before the **SHUTTER (2)**. Align the **POLARIZATION**

VECTOR for minimum reflection and maximum penetration per the Handout, **ALIGNING POLARIZATION VECTORS**. Now is the time to check the tune of the Pinhole of the **SPATIAL FILTER (3)**. (This could be still set up from the **MASTER SET UP**.)

9. Check the **INCIDENT FLUX** at the **PLATEHOLDER** with the **Probe** of the **S & M MODEL A-3 PHOTOMETER** placed where the center of the **HOLOGRAPHIC PLATE** will be. See the **HANDOUT, S & M MODEL A-3 PHOTOMETER**, for the **EXPOSURE TABLE**.
10. Expose, process and evaluate the hologram. The sharpest image will be visible under laser light, although a black & white image is visible under white light. Applying a color filter to the hologram will result in any hue of image.