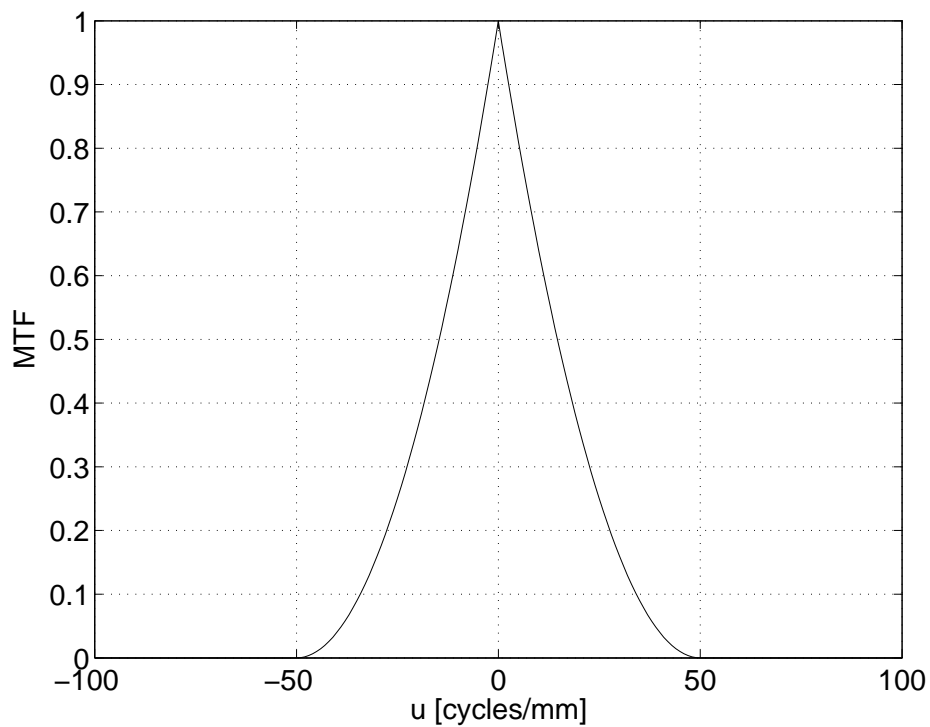


1. Goodman problem 5-8 (page 122). *Hint* : Use the result from Goodman figure 5.12, and the discussion after equation 5-57.
2. Goodman problem 5-10 (page 123).
3. Goodman problem 6-11 (page 169)
4. The modulation transfer function (MTF) of an optical system is given in the figure below. The system is illuminated with quasi-monochromatic, spatially incoherent light. The intensity pattern at the input plane of the system is given by

$$I(x) = \frac{1}{2} \left[ 1 + \frac{1}{2} \cos \left( 2\pi \frac{x}{40\mu\text{m}} \right) + \frac{1}{2} \cos \left( 2\pi \frac{3x}{40\mu\text{m}} \right) \right]$$



- 4.a) What is the contrast of the original intensity image?
- 4.b) Plot the intensity pattern formed at the output plane, and calculate the image contrast.

**4.c)** Can you guess the coherent transfer function and cut-off spatial frequency for this imaging system?