7. Instrument Operation

Problems

7.1. A TEM is equipped with a three-lens condenser system, with the three thin, ideal lenses equally spaced by $L = 8.0\ \text{cm}$. The first crossover (source) is formed by C1 at $P = 6.0\ \text{cm}$ above C2. The final image (probe) is formed at $Q = 7.0\ \text{cm}$ below C3. Find the following:

a) The net magnification *M* with C2 off;

b) The focal length f_3 of C3 with C2 off;

c) The focal length f_2 of C2, such that M' (the net magnification with C2 on) is 10% of M [the net magnification with C2 off, from (a), i.e., $M' = r \cdot M$, where $r = 0.10$].

d) The focal length f_3 of C3 for the condition in c).