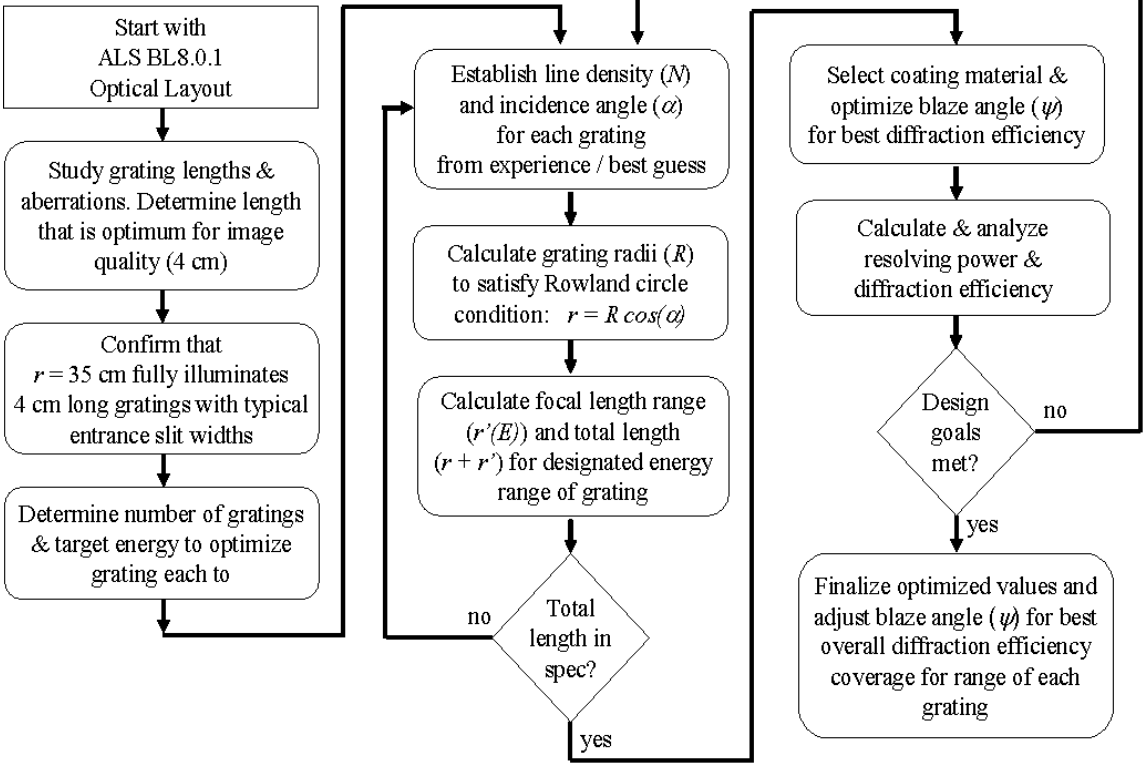
Start with ALS BL8.0.1 Optical Layout
Study grating lengths & aberrations. Determine length that is optimum for image quality (4 cm)
Confirm that r = 35 cm fully illuminates 4 cm long gratings with typical entrance slit widths
Determine number of gratings & target energy to optimize grating each to
Establish line density (N) and incidence angle (α) for each grating from experience / best guess
Calculate grating radii (R) to satisfy Rowland circle condition: r = R cos(α)
Calculate focal length range (r'(E)) and total length (r + r') for designated energy range of grating
Total length in spec?
no
yes
Select coating material & optimize blaze angle (ψ) for best diffraction efficiency
Calculate & analyze resolving power & diffraction efficiency
Design goals met?
no
yes
Finalize optimized values and adjust blaze angle (ψ) for best overall diffraction efficiency coverage for range of each grating