

Gaussian Reduction - 3 Surface

$$\phi_i = (n'_i - n_i) C_i = (n'_i - n_i) / R_i$$

$$\tau_i = x_i / n_i$$

$$\phi_1 = (1.50 - 1.33) / 25.0 = .0068$$

$$\tau_1 = 5.0 / 1.50 = 3.333$$

$$\phi_2 = (1.60 - 1.50) / -40.0 = -.0025$$

$$\tau_2 = 5.0 / 1.60 = 3.125$$

$$\phi_3 = (1.33 - 1.60) / -60.0 = .0045$$

Reduce the first two surfaces:

$$\phi_{12} = \phi_1 + \phi_2 - \phi_1 \phi_2 \tau_1$$

$$\delta'_{12} = - \frac{\phi_1}{\phi_{12}} \tau_1 = -5.202$$

$$\phi_{12} = .004357$$

Reduced spacing for the third surface:

$$\tau = \tau_2 - \delta'_{12} = 8.327$$

Reduce with the third surface:

$$\phi = \phi_{12} + \phi_3 - \phi_{12} \phi_3 \tau$$

$$\delta' = \frac{d'}{n'} = - \frac{\phi_2}{\phi} \tau = -4.168$$

$$\phi = .00869$$

$$d' = -5.544$$

$$f = 1/\phi = 115.0$$

$$f'_2 = n' f = 153.0$$

$$\text{BFD} = f'_2 + d' = 147.5$$