where \( L \) is the spacing between crests and \( b_L \) is the length of a single undulation, it can be seen that the field may be described by a Fourier series expansion,

\[
\delta(x) = \sum_{n=0}^{\infty} D_n \cos \left( \frac{2n\pi x}{L} \right)
\]  

(2.39)

The Fourier coefficients for the case of four cosine bumps shown in Figure 2.2 on a flat bottom are given by

\[
D_0 = \frac{D}{\pi}
\]  

(2.40)

\[
D_1 = \frac{-D}{2}
\]  

(2.41)

\[
D_n = D \frac{\cos \frac{n\pi}{2}}{\pi(1-n^2)(1+\cos n\pi)}
\]  

(2.42)

The cosine transform is used in this case since it is even about the starting point of the domain.

\( R_1 \) becomes

\[
R_1 = \frac{-i\alpha}{2l} \left( l^2 - m^2 \right) \int_{0}^{N_b L} \left[ \sum_{n=0}^{\infty} D_n \cos \left( \frac{2n\pi x}{L} \right) e^{i2n\pi x} \right] dx
\]  

(2.43)

where \( N_b \) is the number of bars in the field. For purposes of creating the most effective design, it would be helpful to determine the relative contribution of each Fourier component.