transmitted energies established, the transmitted and reflected energy ratios and reflection coefficient could be determined. Also, total energy of the system could be tested against the incident energy by adding reflected and transmitted energy and dividing by incident energy. Since by linear theory

\[ E = \frac{1}{8} \rho g H^2 \]  

(5.6)

and reflected and transmitted energy ratios

\[ R_r = \frac{E_r}{E_i} \]  

(5.7)

\[ T_t = \frac{E_t}{E_i} \]  

(5.8)

\[ r = \text{Reflected at R-array} \]

\[ t = \text{Incident at T-array} \]

\[ i = \text{Incident at R-array} \]

(5.9)

Then the reflection coefficient is,

\[ \kappa_r = \sqrt{\frac{E_r}{E_i}} \]  

(5.10)

By conservation of energy

\[ E_i = E_r + E_t \]  

(5.11)

Or, since \( h(x1) = h(x2) \),

\[ 1 = R_r^2 + T_t^2 \]  

(5.12)

As will be seen in section 5.4, for most runs only about 75 percent of the energy measured entering the system was measured exiting the system through reflection and transmission. Again using linear theory, estimates of the energy attenuation due to bottom and side boundary friction were calculated. In a channel of uniform width \( b \) and depth \( h \), the damping of a linear wave propagating over a distance \( l \) may be estimated to be

\[ a = a_0 e^{-\Delta f l} \]  

(5.13)