

$$T(\tau_h(f))(x) = T(f(x-h)) = \sum_{n=-\infty}^{\infty} \lambda_n a_n e^{in(x-h)} \tau_h(T(f))(x) = T(f(x-h)) = \sum_{n=-\infty}^{\infty} \lambda_n a_n e^{in(x-h)},$$