

$$\omega_{j=1,2}(k) = (-1)^{1+j} i c^{-1} |k|$$

$$\omega_{j=3,4}(k) = (-1)^{1+j} i \sqrt{(f^2 + g^2)(k_1^2 + k_2^2) - 4fgk_1k_2}$$

$$\omega_{j=5,6}(k) = 0.$$