Here x and y are points in $\boldsymbol{R}^3$, k is a real scalar, and δ is the three-dimensional delta function. The index of refraction $n(x)$ we assume to be a positive, bounded, real- [redacted]

Proof. The proof, based on the use of Green's formula, is similar to the corresponding proof in [3] and is omitted here.

Corollary 1.

$$\int_{\partial\Omega} \left(G_0^-(z-x)\frac{\partial}{\partial\nu} G_0^+(z-y) - G_0^+(z-y)\frac{\partial}{\partial\nu} G_0^-(z-x) \right) \mathrm{d}S_z$$

$$= G_0^-(y-x) - G_0^+(x-y). \tag{2.6}$$

Proof. We set $n(x)$ equal to one in theorem 1.

Corollary 2. Suppose the hypotheses of theorem 1 hold and $G^\pm = G_0^\pm + G_{\mathrm{sc}}^\pm$. Then

$$G_{\mathrm{sc}}^-(y,x) - G_{\mathrm{sc}}^+(x,y) = \int_{\partial\Omega} \left(G_0^-(z-x)\frac{\partial}{\partial\nu} G_{\mathrm{sc}}^+(z,y) - G_{\mathrm{sc}}^+(z,y)\frac{\partial}{\partial\nu} G_0^-(z-x) \right.$$

Proof. We substitute $G^+ = G^+ + G^+$ into (2.1), simplify, and evaluate at $k = 0$ [illegible]

Proof of theorem 2. Following [1] we apply support information to the computation of

Refereces

[1] Rose J H and Cheney M 1987 Self-consistent equations for variable velocity three-dimensional inverse scattering *Phys. Rev. Lett.* **59** 954–7

[2] Cheney M, Rose J H and DeFacio B 1988 A fundamental integral equation of scattering theory *SIAM* [illegible]