derivation for the potential of a point charge above thin layer of uniform dielectric above an anisotropic substrate bulk material

using the furrier transform

apply boundary conditions as and as

applying the conditions ,

and ,

1+2

let

1-2

3+4

3-4

sub 5 in to 7

sub 6 in to 8

sub 9 in to 10

sub 11 in to

giving

as

then

where

trivial cases:

for

for

returns result as expected as for k>0 h is dominant for second term for first term h is dominant for all values of k

for

returns expected result for standard 4 L system as second term only present for the k=0 case of the series

for

returns expected result for standard 4 L system with the interface at a position h as second term only present for the k=0 case of the series