

Re: Need Near Field equations problems

Source: <http://sci.tech-archive.net/Archive/sci.physics/2004-11/3786.html>

From: Roy Lewallen (w7el_at_eznec.com)

Date: 11/14/04

Date: Sun, 14 Nov 2004 17:59:24 +0000 (UTC)

curiousjohn4 wrote:

- > *Could someone please provide a correct near field equation that a*
- > *computer programmer can understand? I'm using the following equation*
- > *in a simple simulation but it's not working in all cases.*
- >
- > $E = a * \sin(\theta) * q / (4 * \pi * e * c^2 * r)$

I don't know where you got that equation, but I'm not surprised it's not giving the right answer. In the near field, there are components inversely proportional to r , r^2 , and r^3 . The equations are too complex to easily write in ASCII, and the terms require some definition. But you can find the relevant equations in Jordan & Balmain, *Electromagnetic Waves and Radiating Systems*, eq. 10-41 and 10-42; Kraus, *Electromagnetics*, eq. 13-49 and 13-50; Johnk, *Engineering Electromagnetic Fields and Waves*, eq. 11-41a and 11-41b; or most other electromagnetics and some antenna texts. Note that two equations are given, one for the radial component and another for the circular (θ) component, which decay at different rates as the distance from the current element increases.

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