

Re: Capacitor and Force

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- *From:* Jonathan Kirwan <jkirwan@xxxxxxxxxxxxxxxx>
 - *Date:* Tue, 16 Oct 2007 08:03:06 GMT
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On Tue, 16 Oct 2007 04:51:13 GMT, "Jon Slaughter" <Jon_Slaughter@xxxxxxxxxxxx> wrote:

<snip>

But the main point is, I'd like to see you find the closed form solution to it by hand since, again, you seem to think computing integrals by hand is easy. Remember, its not the same on that page because they did not compute any integral for the general case of two 2d parallel plate... or, if you think they did, then do it for arbitrary charge densities.. doesn't quite matter because you say they are easy.

Jon, I'd already thought just a little bit about the integral before looking at the web page that The Phantom pointed at and had already come to exactly the same approach that the web page mentions, using annular rings with an infinitesimal width and integrating, as the right simplifying approach. I didn't go further, as their description about the approach matched my own initial impression about it and the solution they gave appeared, without spending time, to be correct.

Do you have any reason to imagine that the author of the page didn't actually solve the integral correctly? Why also do you bring up the complicating idea of 'arbitrary charge densities' when, in the case of idealized parallel plates I'd imagine that the charge was distributed to minimize the required work and thus uniformly spread (except perhaps at the edges of the plates, where closer thinking may be required, but probably wouldn't much impact the final result?)

You mentioned you were off by a factor of two (I'm not accepting or rejecting that.) The web page that The Phantom mentioned said that folks often jump initially to imagine a result that is, in fact, a factor of two off the actual mark. Is that coincidence?

Jon

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