Capacitor with unequal charges on the plates

Suppose we have two plates which have unequal magnitudes of charge. In order for the two plates of a parallel plate capacitor to have significant unequal magnitudes of charge, it would have been necessary to charge them separately by some external means before bringing them together to form a capacitor.

Maybe the two plates of capacitor have unequal charges. The excess goes to battery somehow. Jun 24, 2023 #5 Kashmir. 468 74. PeroK said: Do you have a particular set-up in mind? In general, if the total charge on a system is zero, then the positively charged components must have equal and opposite charge in total to the negatively charged ...

$begingroup$ @dts If you have two sheets of unequal charge, then the fields outside those sheets will no longer exactly cancel. You only get zero field outside the capacitor if there are equal and opposite charges on the plates. ... +Q_text{bottom}$ superimposed on a parallel-plate capacitor with charges $pm(Q_text{top}-Q_text{bottom})/2 ...

$begingroup$ But suppose we have unequal charges on the plates say Q and 0. Then why don"t I end up with charges -Q and +Q on the other plate and instead have -Q/2 and +Q/2? ... Typically parallel plate capacitors are idealized somewhat. The field between them is considered uniform. Normally this is a very good approximation. But it is ...

In the figure shown, the plates of a parallel plate capacitor have unequal charges. Its capacitance is C. The distance between the plates of cross-sectional area A is d. Consider the following statements: 1). The energy stored in the electric field region between plates is ...

Question: Charge build up between the plates of a capacitor stops when? A) Charge on both plate is the same B) There is not a net charge on the plate C) unequal amounts of charges accumulate on the D) The Potential difference between the plate equal the potential difference between the eternal of the battery What happens when a rubber rod is rubbed with a piece

So Q? is the total charge on C?. Q? is the total charge on C?. This charge will be due to any initial charge (Q?(0) = V??·C?, Q?(0) = V??·C?), and the charge flowing through the capacitors because of the switch, which we can call Q.

Example (PageIndex{1A}): Capacitance and Charge Stored in a Parallel-Plate Capacitor. What is the capacitance of an empty parallel-plate capacitor with metal plates that each have an area of (1.00, m^2), separated by 1.00 mm? How much charge is stored in this capacitor if a voltage of (3.00 times 10^3 V) is applied to it? Strategy

What is the charge on the capacitor? A parallel-plate capacitor with circular plates and a capacitance of 13.9

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mu F is connected to a battery which provides a voltage of 12.8 V. a. What is the charge on each plate? b. How much charge ; A parallel-plate capacitor has circular plates of 7.13 cm radius and 1.01 mm separation. (A) Calculate the ...

$begingroup$ @garyp - no, the force of attraction of the charges of one plate on charges in the other plate rapidly fall off when you move away from the area of overlap. The approximation will only break down if the ratio of spacing to lateral dimension is not small (that is, when the gap is "large "compared to the size of the plate) - in that case edge effects are not insignificant (but ...

In summary, the question is about finding the capacitance of a parallel plate capacitor with unequal charges on the plates. After discussing various scenarios, it is determined that the outermost surfaces of the plates will have equal charges and the innermost surfaces will have opposite charges. This is based on Gauss Law and the fact that the ...

But for there to be unequal charge on two capacitor plates there needs to be a difference in the plate areas and, this creates "fringing" to a third party (usually ground) like this: - The overlap area between left plate and ...

A discharged capacitor has _____ charges on its plates. no unequal equal negative

But, in normal capacitors forces are working to keep the charges on plates, while here forces are working to keep the charges away from plates. This is because in normal capacitor forces are attractive, while here forces are repulsive. So, result is- in normal capacitors excess charges in wire can be ignored, but here it can"t be ignored ...

$begingroup$ @garyp - no, the force of attraction of the charges of one plate on charges in the other plate rapidly fall off when you move away from the area of overlap. The approximation will only break down if the ratio of spacing to lateral ...

In nthe figure shown the plates of a parallel plate capacitor have unequal charges. Its capacitance is "C! Pis a point outside the capacitor and close to the plate having charge - The distance between the plates is "d". Find 20 -Q .P (a) The potential difference between the plates. (b) The energy stored in the electric field in the region ...

I see it like this. When plates have unequal charge, there is nothing to keep the extra charge of the higher charged plate on it. The extra charged particles will just repel each other and find their way away from the plate (it is a conductor, after all).

In figure, the plates of a parallel plate capacitors have unequal charges. Its capacitance is C. P is a point outside the capacitor and close to the plate of charge -Q. The distance between the plates is d. Then . A a point

charge at point P will experience electric force due to ...

If the plates of a capacitor have unequal charge, there is now energy stored in more than one capacitance. There is the capacitance that exists between the two plates (the mutual capacitance) as well as the capacitance of each plate to the environment.

Study with Quizlet and memorize flashcards containing terms like 1)True or False? a) From the definition of capacitance C = Q/ ?V, it follows that an uncharged capacitor has a capacitance of zero b) as described by the definition of capacitance, the potential difference across an uncharged capacitor is zero, 3) An electronics technician wishes to construct a parallel-plate capacitor ...

The capacitance of a capacitor with evenly charged plates can be calculated using the formula C = Q/V, where Q is the charge stored on each plate and V is the potential ...

PleaThe plates of parallel capaitor are given charges `+4Q` and `-2Q`. The capacitor is then connected across an uncharged capacitor of same capacitances fir...

$begingroup$ The total energy stored in an electric field goes roughly like the volume where the field is strong. A capacitor whose plates have equal charge has a strong field in the gap between the plates, but a capacitor whose plates have unequal charge has a "fringe field" which is non-negligible outside of the capacitor.

A parallel-plate capacitor has plates of unequal area. The larger plate is connected to the positive terminal of the battery and the smaller plate to its negative terminal. Let Q, and Q be the charges appearing on the positive and negative plates respectively, (a) Q > Q (b)Q = Q (c) Q < Q

A parallel-plate capacitor has plates of unequal area. The larger plate is connected to the positive terminal of the battery and the smaller plate to its negative terminal. Let Q+and Q- be the charges appearing on the positive and negative plates respectively. 1. Q+ > Q- 2. Q+ = Q- 3. Q+ < Q- 4. The information is not sufficient to decide the relation between Q+ and Q- Padma ...

In the figure shown, the plates of a parallel plate capacitor have unequal charges. Its capacitance is C. The distance between the plates of cross sectional area A is d nsider the following statements:1. The energy stored in the ...

Get access to the latest Charge distribution on plates with unequal charges prepared with IIT JEE course curated by Ayush P Gupta on Unacademy to prepare for the toughest competitive exam. ... Parallel Plate Capacitor. 8:46mins. 4. Mechanical Force on Charged Conductor, Plates of Capacitor. 6:23mins. 5 (Part 1) Effect of Dielectric Inside ...

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As we know that for isolated system of parallel plates, the charge on the outer surface of the first and last plate is $displaystylefrac{sum Q_i}{2}$ where $sum Q_i$ is sum of charges on all the plates.. Now, after connecting these system to a battery, the battery supplies some charge due to which distribution of charges takes place and the same amount of ...

In the figure shown the plates of a parallel plate capacitor have unequal charges. Its capacitance is "C". P is a point outside the capacitor and close to the plate of charge-Q. The distance between the plates is "d" then which statement is wrong (A) A point charge at point "P" will experience electric force due to capacitor (B) The potential ...

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