

Question #357

The Van de Graff generator is back this week with an extreme makeover. On top of the spherical dome sits face down an array of aluminum pie pans, which we knicked from Grandma's pantry last Thanksgiving.



The question is simple enough: what will happen when the Van de Graff generator is turned on?

- (a) Nothing will happen. Since the dome and the pie pans are at the same potential, no current can flow.
- (b) Since the dome and pans are holding the same charge, the two will repel each other so strongly that the entire stack of pie pans will blast off like a rocket and crash into the ceiling!
- (c) Small sparks between the surface of the bottommost pie pan and the spherical dome will occur, since the potential difference between the two will gradually build and then discharge through the small region of air (dielectric) separating the two.
- (d) ~~Magie~~ Newton's 3rd law will cause a reaction force on the edge of the pie pans, which will result in a torque causing the entire stack to spin. Since the pans will be charged negative, the pans will spin clockwise via the "right hand rule."
- (e) According to Lenz's Law, eddy currents will be induced in the pie pans so as to repel the charge on the dome, causing the array of pie pans to levitate.
- (f) Other (you must explain).

Though many possibilities sound entertaining, one one (or none) hold the correct answer!

Click here for [Answer #357](#) after November 16, 2009.

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For questions and comments regarding the *Question of the Week* contact [Dr. Richard E. Berg](#) by e-mail or using phone number or regular mail address given on the [Lecture-Demonstration Home Page](#).