More considerations on hidden momentum

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One amp is one Coulomb per second. Hidden momentum is $q\mathbf{A}$. Thus in the Earth's **A** field of say 100 Weber/m a current of 1 amp is transporting momentum at a rate of 100 Kgm/s per second, which is a force represented by 1Kg accelerated at 100m/s^2. That is a force of 100 Newtons, or a force of 10Kg weight. If that momentum were being discharged from a hosepipe like high pressure water then the back reaction would be a 100 Newtons force. So why doesn't this show up in experiments? With the Franklin motor drawing a current of say 1 micro-amp that is a force of 10^{-4} Newtons at each brush contact. At a diameter of 14 inches (i.e. 0.355m) we should see a torque of 7.1×!0^{-5}Nm. Is this detectable? Is there a better way of doing this? Can we pour charge onto a circular system of electrodes at one point then take it off at another point that is diametrically opposite at a higher rate than 1μA? Can the temporary storage of that charge (hence also momentum) be some sort of chemical reaction like a chargeable cell?

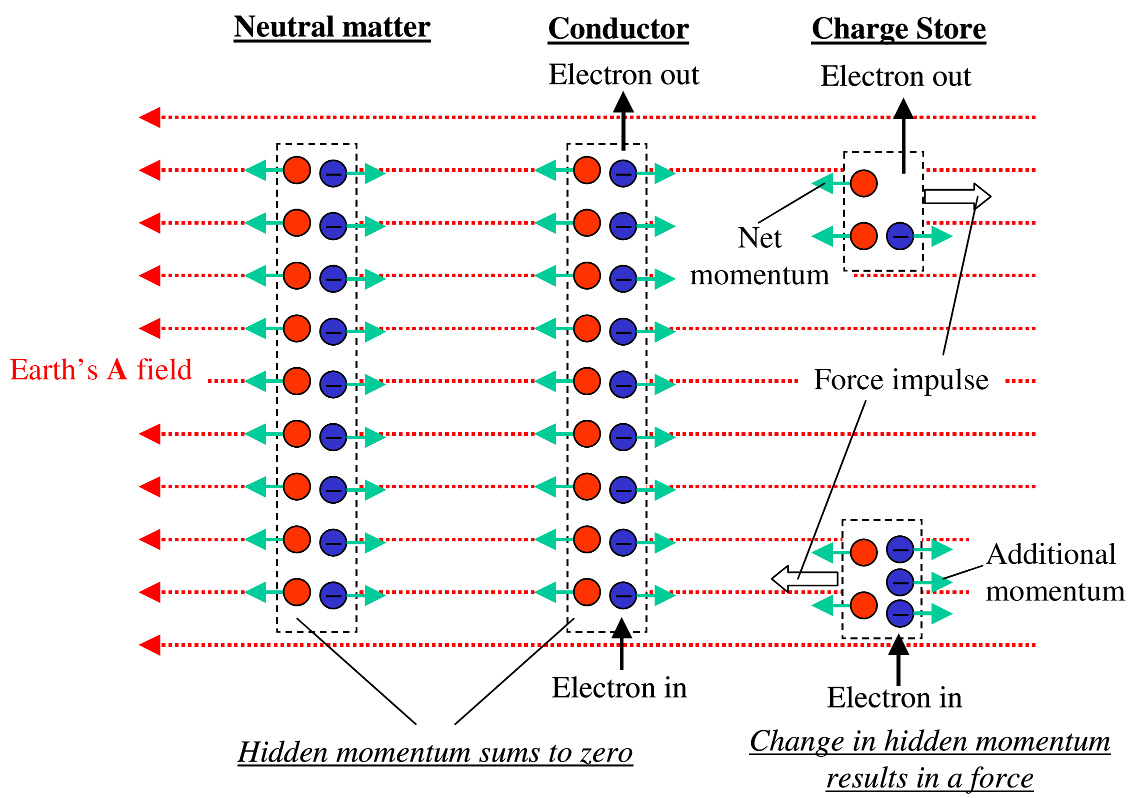

Figure 1. Hidden momentum in neutral matter, in a conductor and in charge stores

In this image we show neutral matter having zero hidden momentum because the positive and negative momenta sum to zero. When considering a conductor carrying current the momenta sum to zero even though momentum is being transported in at one end and out at the other. Only when the transport results in charge being *stored* do we obtain forces attributed to rate-of-change of momentum. To obtain useful forces we need widely separated electrodes that can store large quantities of charge at sensible voltage. A re-chargeable cell has this property in that chemical reactions take place at the electrodes quickly while it takes time for ions to flow through the electrolyte. So if we have widely separated electrodes we can quickly supply electrons at one electrode while at the same time removing them from the other electrode. If our current pulse is narrow enough the change of momentum at each electrode will result in momentum storage that only slowly leaks away via ionic conduction. The next figure illustrates charging of a lead-acid cell showing a fast voltage step applied to the cell with the chemical reactions at each plate that take place before the ionic conduction has reached the other plate.

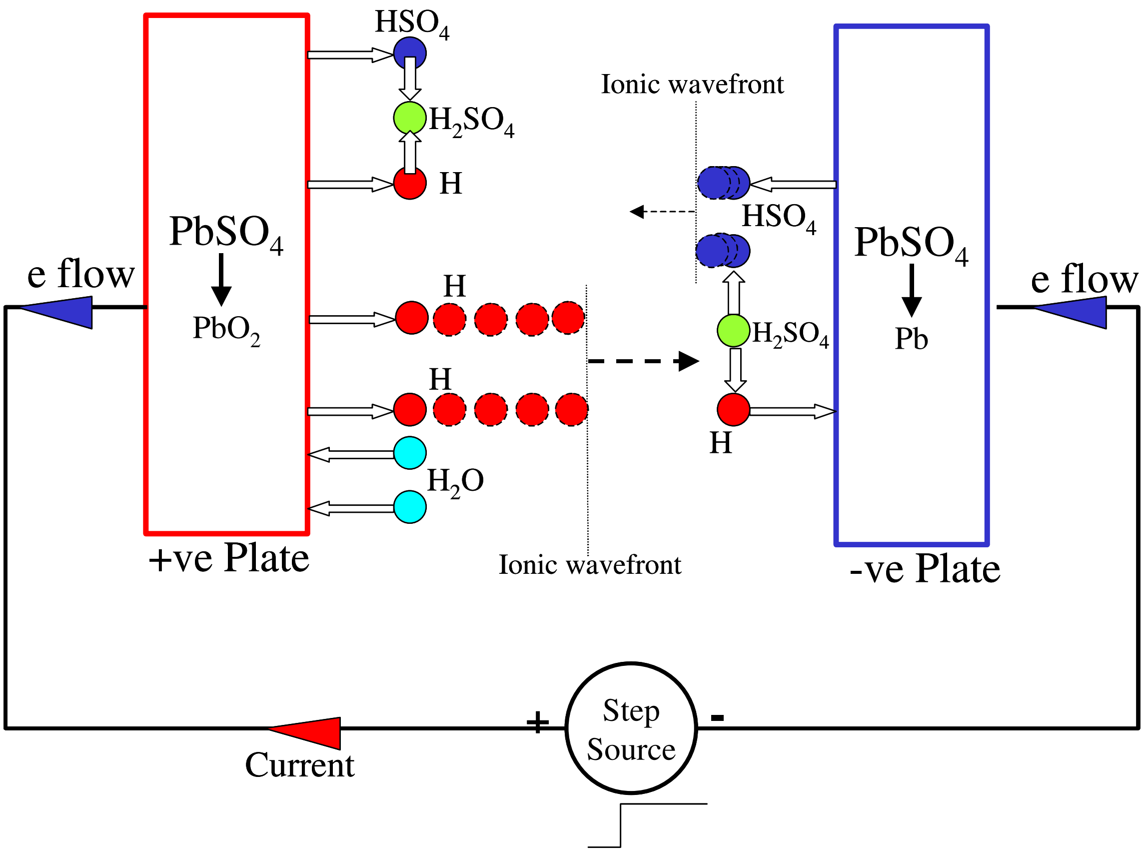

Figure 2. Charge of a lead-acid battery showing ionic conduction

Not only can this be a means for an OU battery charger that uses relatively high voltage pulses (like Bedini's), since the voltage pulse cease before significant current can flow through the cell, but also it offers the means for temporary storage of charge and momentum. The next figure illustrates this temporary storage in the positive H and negative HSO_4 ions produces at each plate. These ions take time to travel through the electrolyte before they meet and recombine into H_2SO_4 when the hidden momentum then disappears. This delay in the annihilation of hidden momentum allows the design of a Franklin type of motor that has electrodes around the periphery of a circular disc. It doesn't use electrostatic attraction or repulsion to create forces on the electrodes but instead uses a sudden change in hidden momentum.

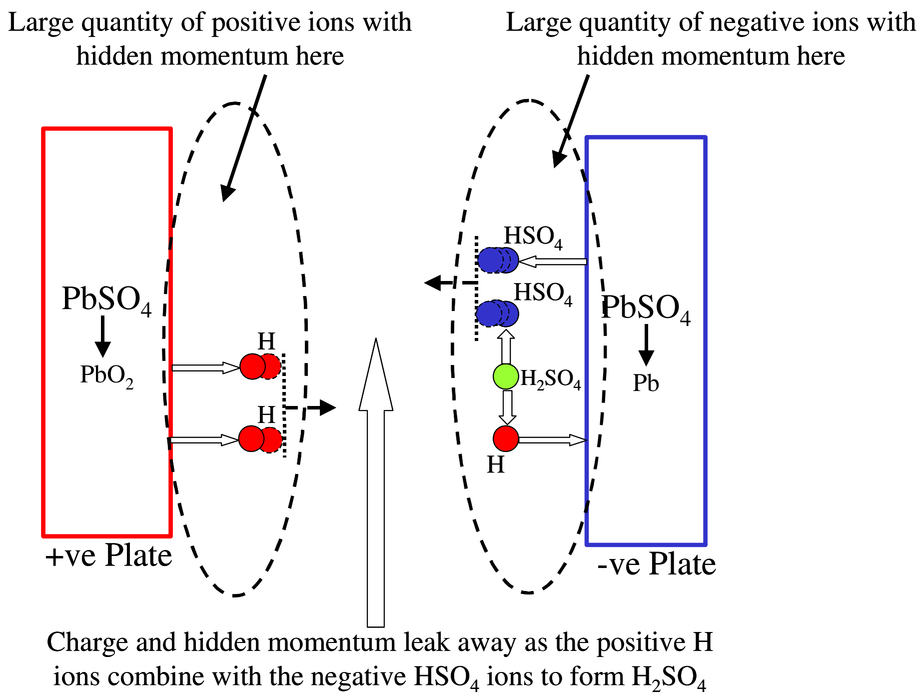

Figure 3. Illustrating the separate areas of hidden momentum

The next figure shows a Franklin type of motor that uses (in this example) PbSO4 electrodes instead of spheres, the electrodes being mounted on the inside surface of a cylindrical plastic container containing dilute sulphuric acid electrolyte. Each electrode has an electrical connection passing through the wall of the container to commutator segments on the outside. Brushes at diametrically opposite positions make contact on the usual commutator action. DC is applied across the brushes and the device is spun by a drive motor that acts both as a starter motor and a generator. When appropriately aligned with the Earth's **A** field the device obtains its own driving torque from the rate-of-change of hidden momentum occurring as each electrode alternates from being charged to being discharged and reverse charged. If this is pumped at a 1 amp average current (the peak currents will be greater of course) rate there should be a torque of 100*d* Newton-meters where *d* is the diameter. The voltage supplied should be minimal since the cells provide their own voltage. At each new commutator position you have a previously charged cell arriving at reversed polarity thus supporting its own sudden discharge and reverse charge. Of course there is negligible torque from electrostatic forces, it all comes from interaction with the Earth's magnetic vector potential.

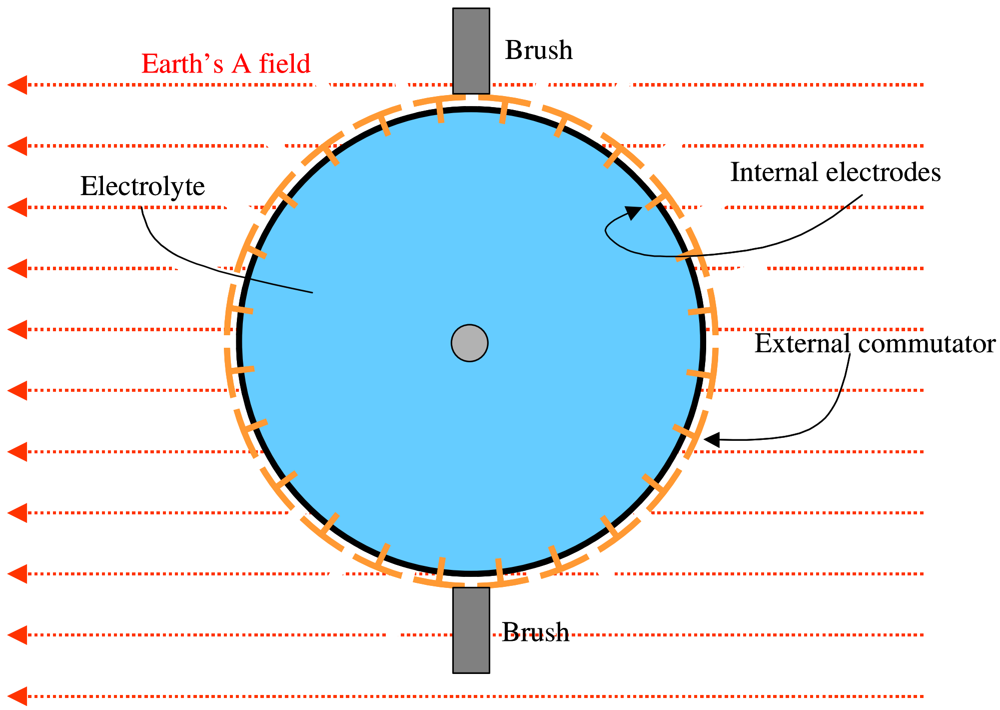

Figure 3. Circular cell concept as a motor.

This all suggest another simple experiment to test for the force impulse. A thin cylindrical tube of glass or plastic is mounted onto a rotation axis. Electrodes and electrolyte salvaged from old car batteries are placed in the tube as shown and the tube is then sealed. On the application of a voltage pulse driving current into the device via flexible wires we should see a sudden torque impulse.

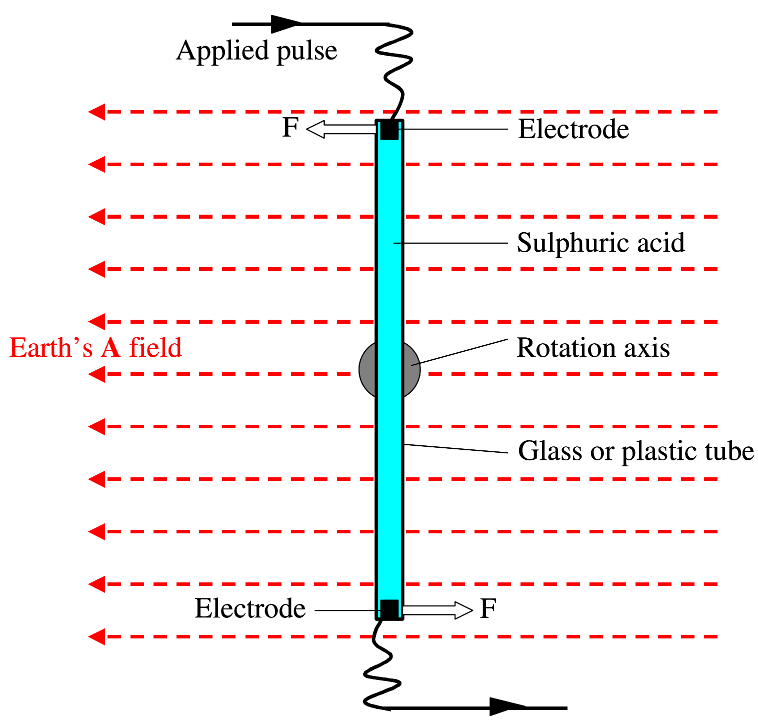

Figure 4. Suggested experiment