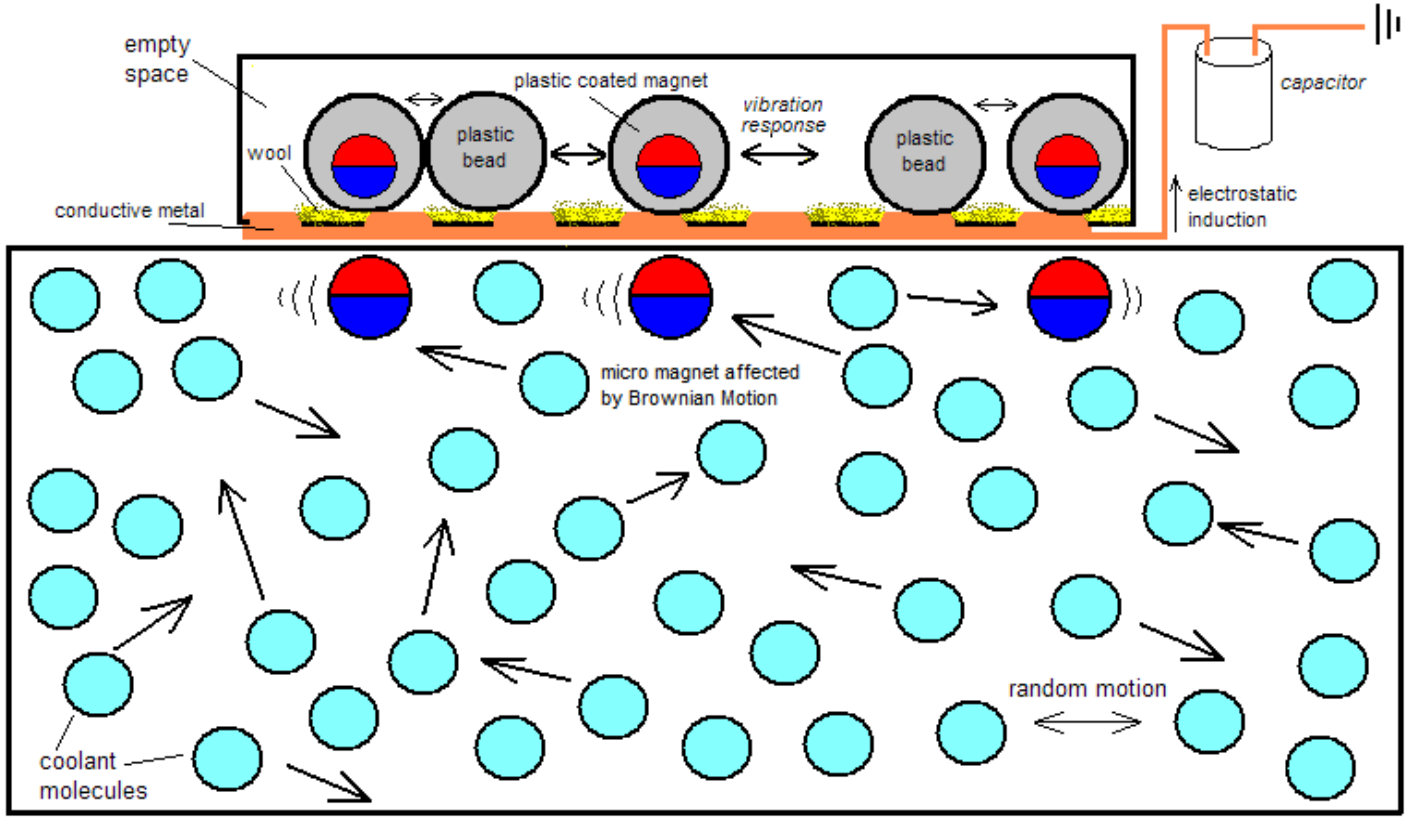
Olson Car Radiator Electric Generator

Brownian Motion Interference



A traditional radiator in a vehicle vents off heat into the surroundings. The above nano technology system converts heat directly into electricity. Brownian motion increases as temperature increases, so more electricity is produced when coolant becomes hotter. The question however remains: why does this system also not work at room temperature where there is no temperature differential, therefore breaking the second law of thermodynamics?

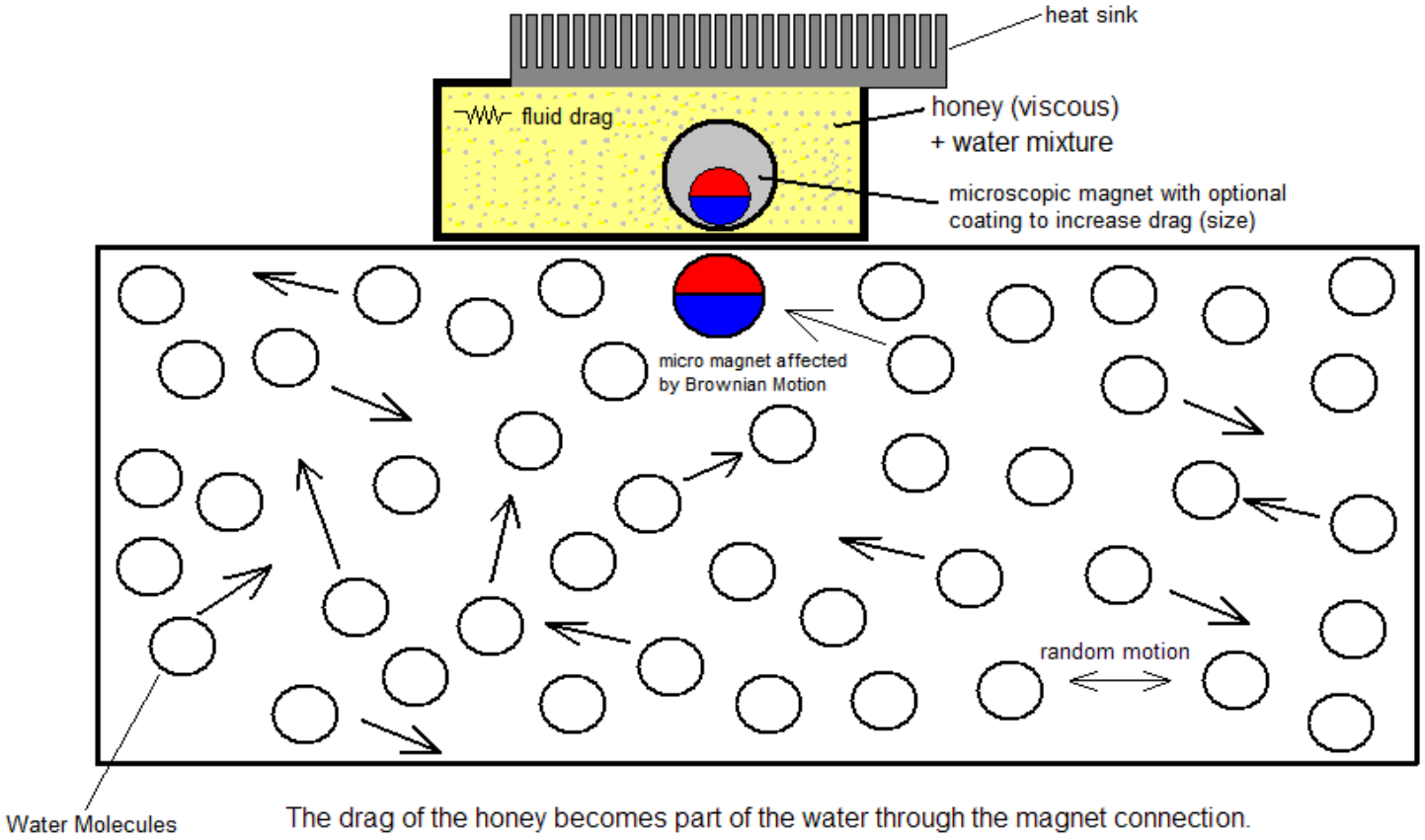
As plastic moves by wool (or similar electron donor) it collects electrons. When the plastic nano bead randomly passes by metal conductor, it causes electricity since the electrons move to ground. This electricity can be captured in a capacitor. The capacitor is not mandatory as the device could simply produce a spark to ground. The capacitor is shown in order to see how electricity would be trapped over time for use later.

Since the nano magnets in the fluid are affected by brownian motion, they transfer vibrations to attractive magnets isolated in a separate enclosure, which are plastic coated and electrostatic drag occurs (random charges are generated) due to the wool (electron donor). Wool need not be used if another material is more convenient or gives up electrons easier. Wool is simply used as a familiar example of an electron donor.

To prevent the nano magnets from clumping together, one can place spacer beads between which are pure plastic, not magnetic.

Olson Viscous Differential Brownian Brake

Brownian Motion Interference



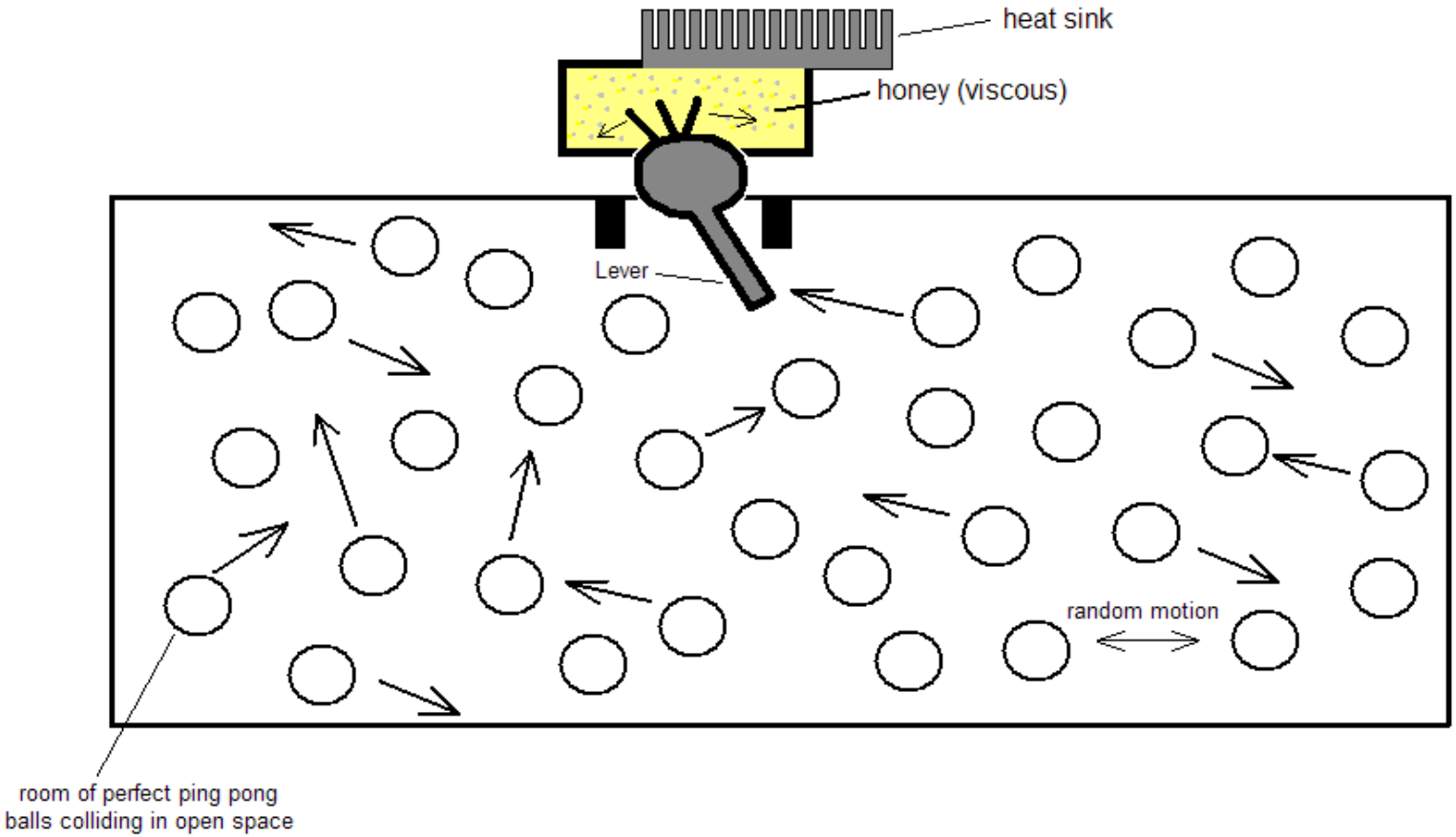
Two different fluids with different viscosity create a differential not in equilibrium without expending any energy. Can viscosity differential be used to break the second law of thermodynamics by separating hot from cold by making use of liquid friction to heat up a fluid in one section and cool another fluid? In this device a nano magnet in water vibrates randomly, which is invisibly attached to another magnet located in honey (viscous fluid).

Falsification: This would break the 2nd Law of Thermo if the honey heats up and the water molecules slow down (cool). For this to not work, the honey would have to transfer heat back into the water immediately so that no temperature differential occurs over time. An insulation layer may be needed to block heat from transferring back into the water. If insulation can be used, it seems unlikely to falsify it this route. Another potential falsification of this device is that the micro magnet in the water simply moves slowly but does not continually slow down over and over. It would seem that if there is drag on the magnet it would slow down with time, while the honey heats up and randomly disperses heat eventually reaching the heat sink at the top. This device may be falsified in such a way that the honey never heats up and the magnet just slowly vibrates without continually losing speed.

One can change the viscosity of the fluid to the desired property. The most likely falsification of them all seems that the magnet just slowly vibrates permanently but never continually slows down over and over. However one option to consider is that the device is not falsified, and it actually breaks the second law. Breaking the second law would falsify the second law, but the 2nd law would still hold true for most macroscopic systems. Since the 2nd law is scientific, it must be falsifiable and one cannot reject this device based on the 2nd law being true, since it could be that the 2nd law is not true in all cases. This viscosity differential device would have to be empirically tested in a nano institution to verify that it works to separate hot from cold. Insulating the device so that room temperature does not cause equilibrium is the only tricky problem with building the device. Otherwise it is extremely simple and easy to build without complexity.

Olson Ping Pong Ball Thought Experiment

Random Motion Interference



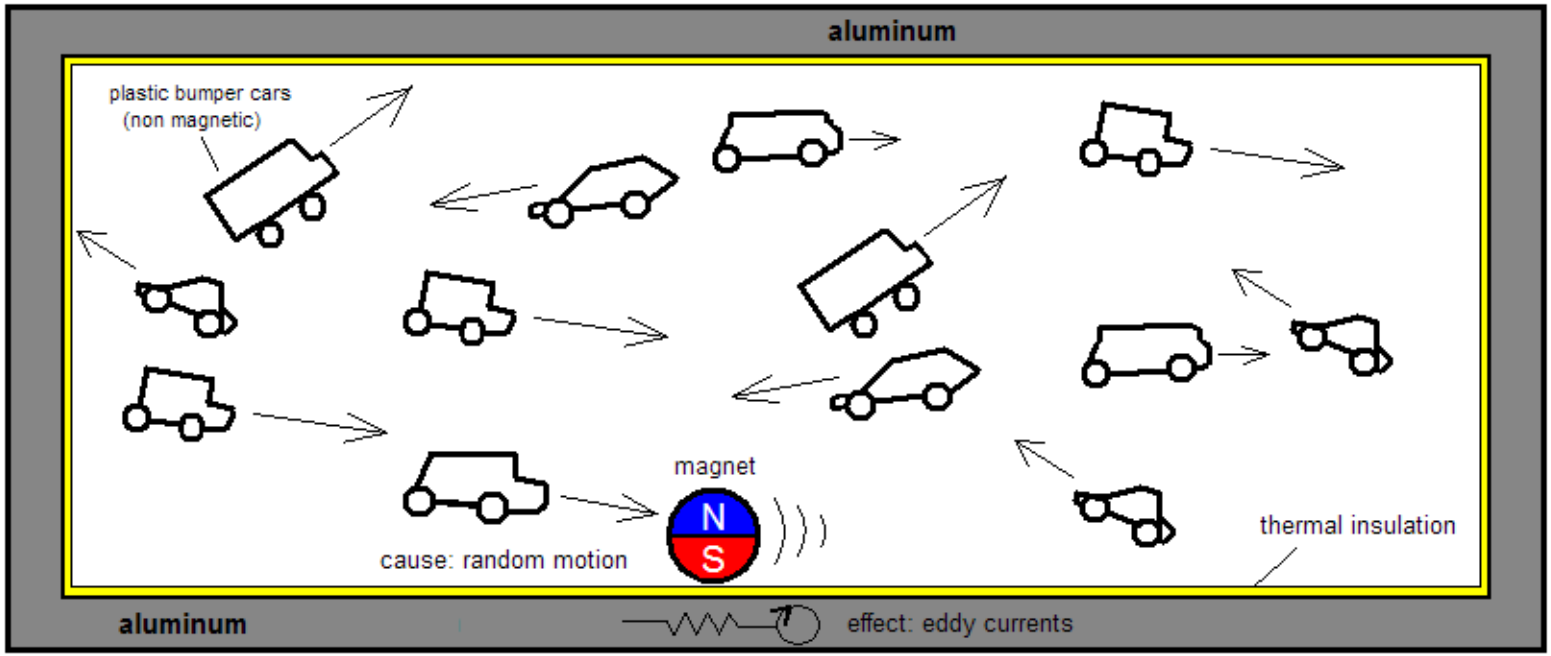
A room full of ping pong balls and a lever at the top is shown. The ping pong balls make contact with a lever. This lever is partially submerged in honey and liquid friction (viscosity) slows the lever down. Heat is extracted due to liquid friction of the honey.

No matter which direction the lever at the top of the room is bashed and vibrated, it will produce liquid friction in the viscous honey either way it moves. The viscous honey acts as a 2 way brake that slows down the lever whether it goes left or right. The lever can be made of non conductive material such as plastic so that it does not conduct much heat back into the ping pong balls. The ping pong balls must have an opposite reaction when the honey heats up: the ping pong balls slow down.

The viscosity of the honey can be changed and tuned by diluting it first with water. If it is too viscous it will not allow the lever to move at all.

The ping pong ball room thought experiment is not intended as a useful machine to produce energy. Ping pong balls require energy to move. However brownian motion in fluids (internal energy) does not require energy to be added at room temperature. Can this device be produced microscopically to violate the second law by extracting heat from water at room temperature with no cold sink? Does viscosity produce non equilibrium?

Olson Bumper Car Thought Experiment



In this macroscopic thought experiment, bumper cars undergoing brownian like motion are slowed down by eddy currents when they collide with a magnet, due to eddy currents causing damping to occur.

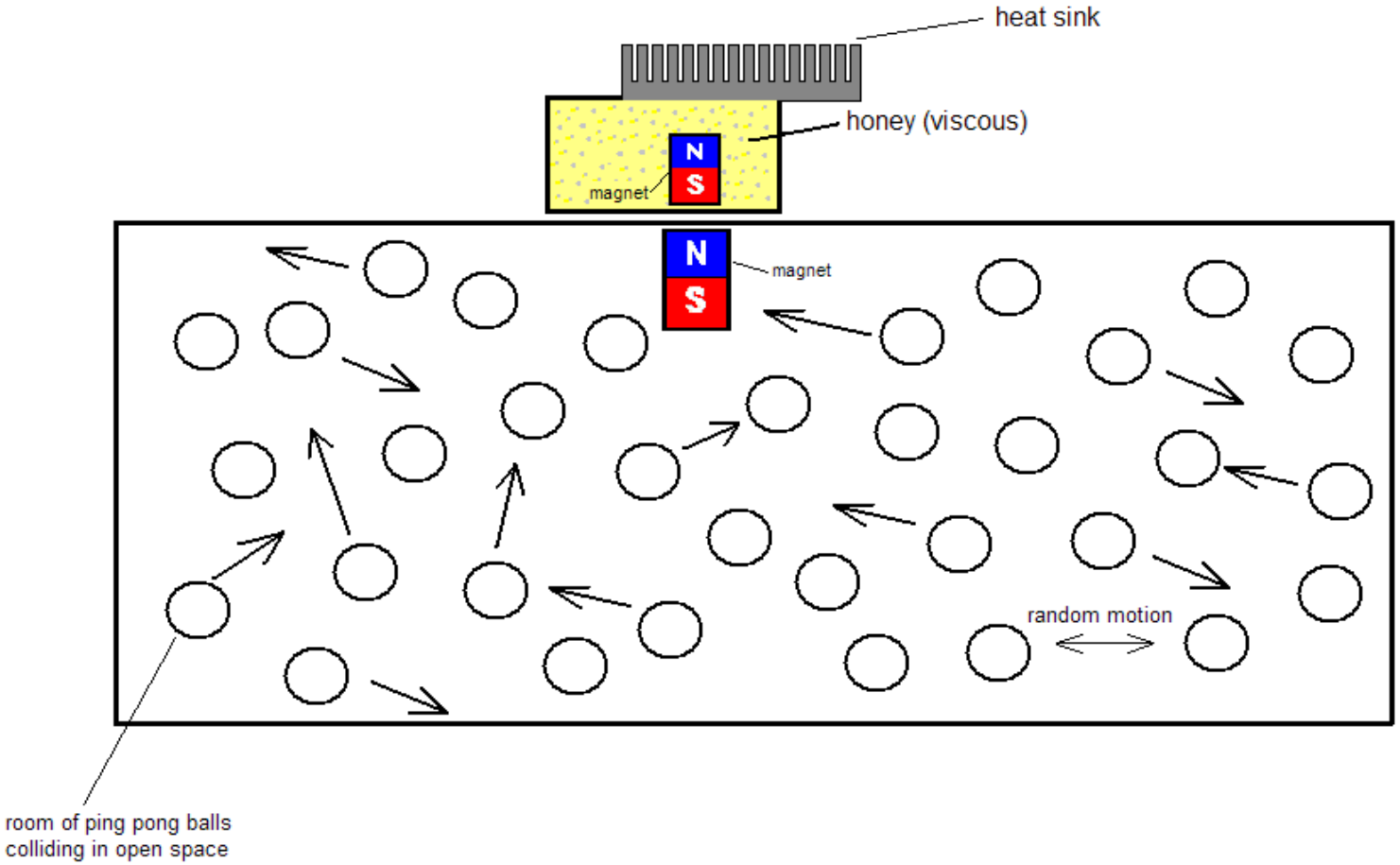
When the magnet is bashed it will not always be located by a wall, but when it is by a wall it will cause eddy currents which cause heat in the aluminum. This is not meant to be a practical system that produces any energy, as it takes energy to move the bumper cars. It is a thought experiment to demonstrate that random motion can produce random eddy currents, slowing cars (particles) down over time due to continual drag in the system when the magnet is near an (aluminum or copper) wall. If the cars start out with an initial speed and have no more added, they will eventually all come to a stop after time. The aluminum must be insulated to keep heat inside the metal and isolated from the cars (particles).

The drivers of the bumper cars may be drunk and chaotic and move completely randomly. Despite the motion being random, heat is extracted. Logically it should follow that room temperature fluids offer similar kinetic energy at the microscopic or nanoscopic scale.

Can internal energy from fluids be drained without a cold sink, breaking the 2nd law of thermodynamics? Do eddy currents allow the second law to be violated by separating hot from cold? This would have to be tested with nano magnets undergoing brownian motion in a nano institution lab that could produce such a device. One possible falsification is that the eddy currents themselves produce a moving magnetic field, or Johnson/Nyquist noise plays a role and heat gets transferred back into the microscopic realm. However this would have to be tested as the magnetic field produced by the eddy currents or Johnson/Nyquist noise may not be equal to the amount that the magnet moves, and there may be a non-equilibrium condition to be exploited. An example of what may happen: the magnetic field in a nano sized device due to eddy currents or Johnson noise may be randomized in such a way that it never reaches back into the fluid fully, or the field spreads out enough not to affect the magnet (backfiring). This would need to be tested by nano institutions to verify that nanoscopic devices cannot exploit eddy currents to sink heat.

Olson Ping Pong Ball Thought Experiment

Random Motion Interference



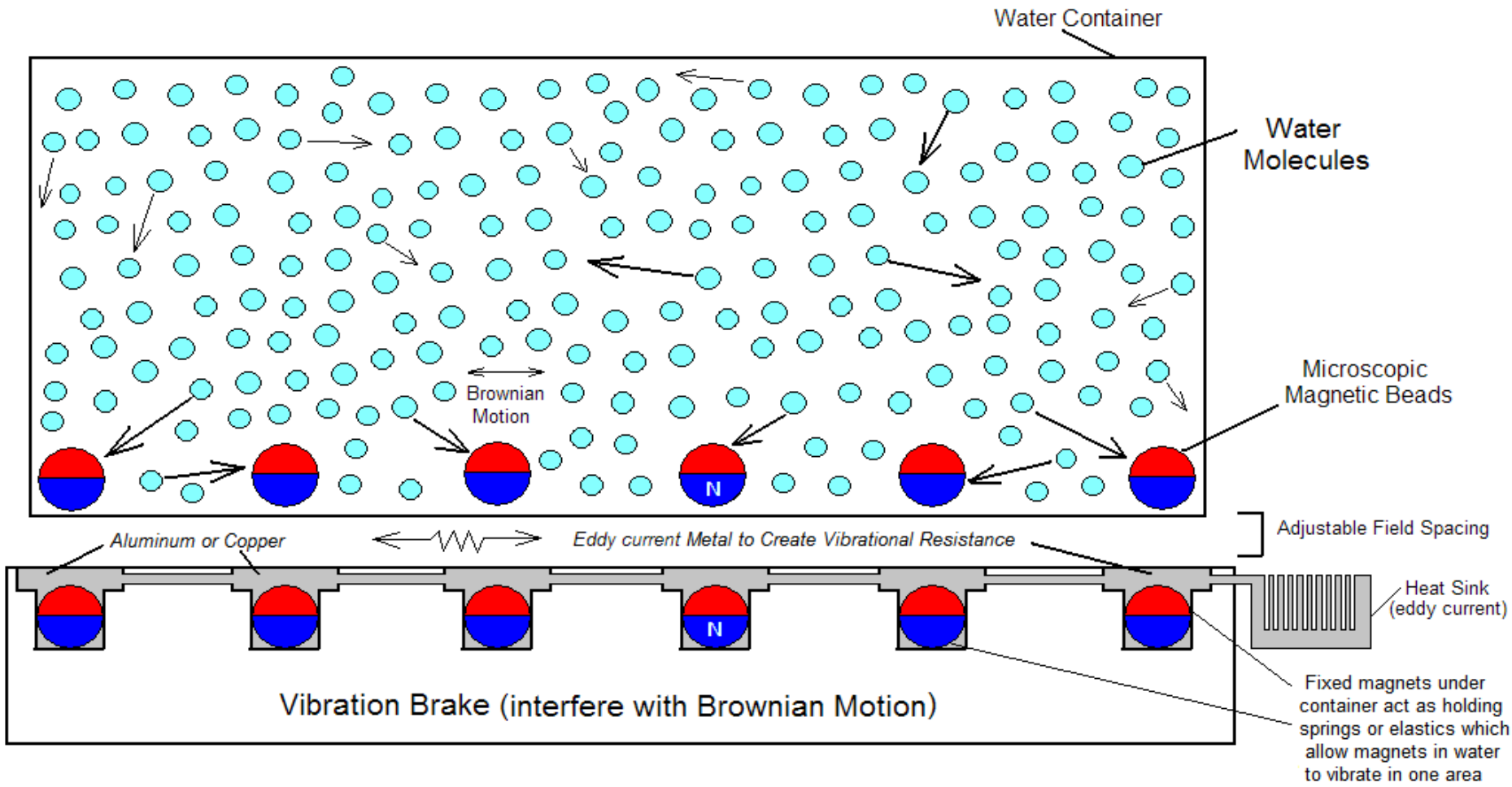
Imagine ping pong balls in a room collide and randomly bash into an object (magnet). This magnet resists motion since it is connected externally to another magnet located in viscous honey. The honey heats up when there is movement and vibration due to liquid friction.

The magnet inside the ping pong room slides on a low friction surface while the outer magnet slides through a higher friction (viscous) fluid. The easiest path for the heat to flow is to a conductive metal heat sink. An opposite reaction must occur: the ping pong balls slow down.

The honey can be diluted with water if it is too viscous. In order for the system to work the honey must not be too rigid otherwise the ping pong balls will just bounce off perfectly without exchanging energy (no brake effect). The question is can this be applied at the nano scale to violate the 2nd law? The ping pong ball thought experiment is useful to imagine how the system would work macroscopicly.

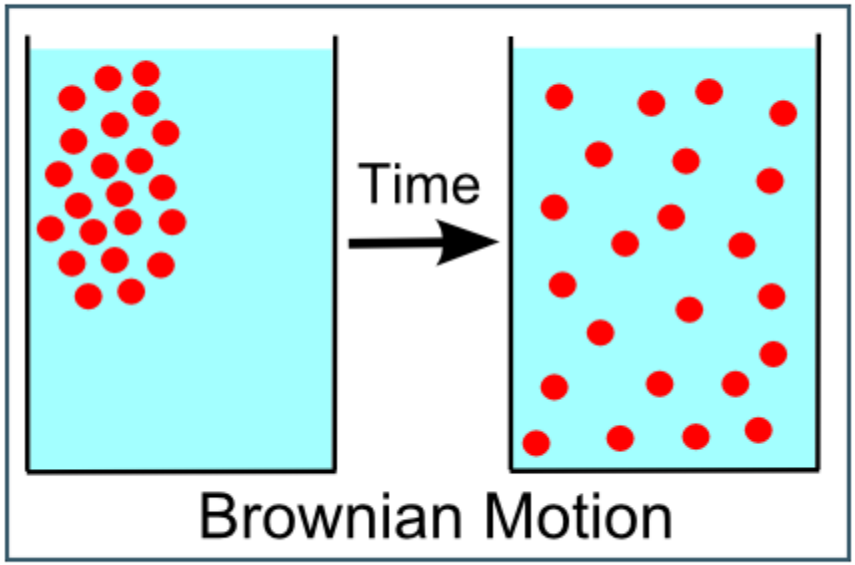
Olson Molecules Decelerator

Brownian Motion Interference



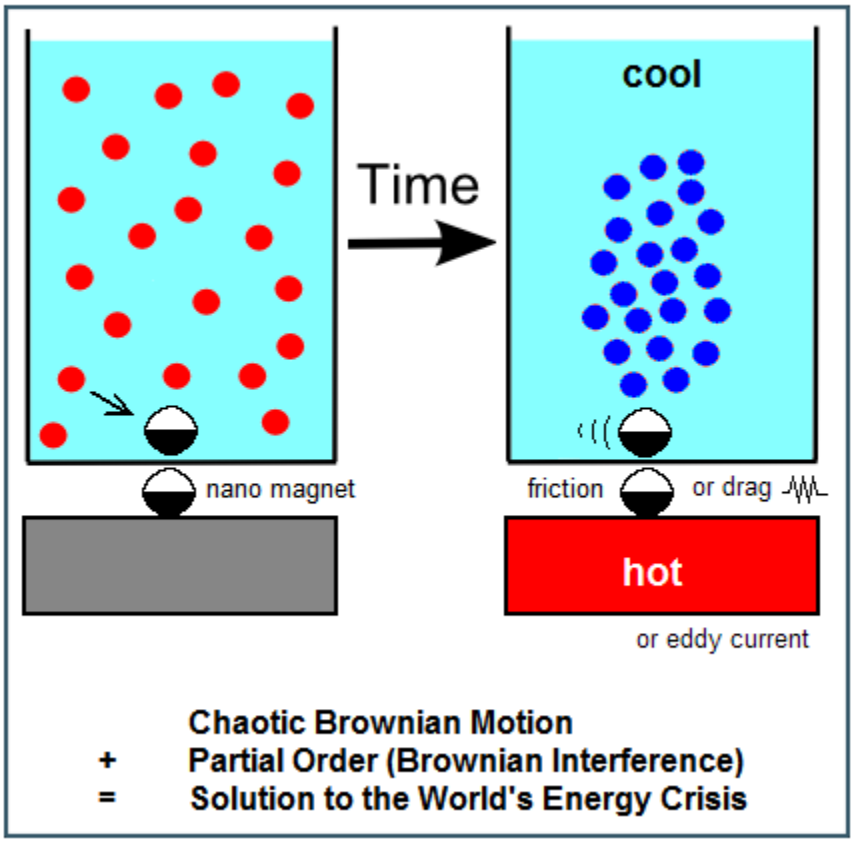
In this device brownian motion causes magnets to vibrate, but these magnets slow down due to eddy currents in the metal. If the heat is insulated in the metal from transferring back into the water, then this would violate the second law of thermodynamics since the eddy drag effect would cause the water to cool since the magnets slow down over time. Falsification: do the eddy currents cause their own microscopic magnetic field, and therefore the heat just transfers back into magnet vibrations? This needs to be tested by a nano lab. If any drag does occur and heat is separated without a cold sink, the second law would be falsified.

Time's Arrow Dogma



Particles Default to Chaotic Disorder

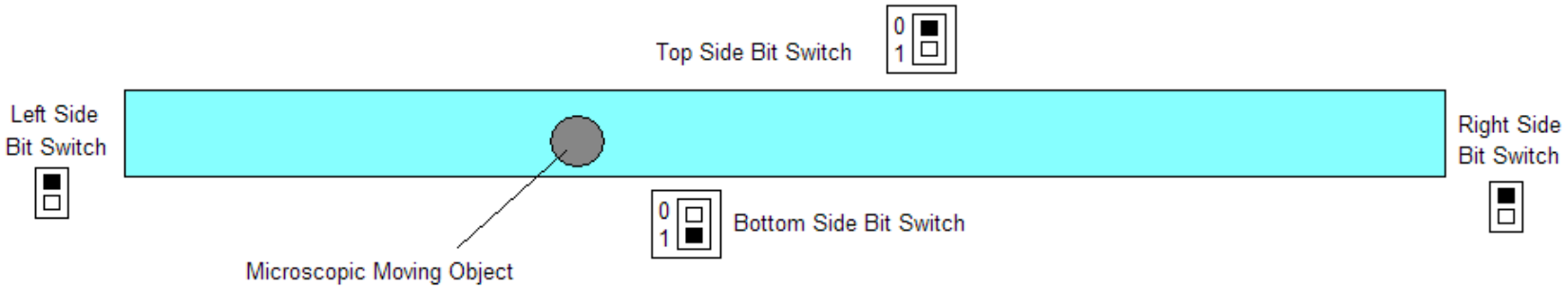
Olson Time Arrow via Brownian Interference



Ideally the second law of thermodynamics would be falsified and would only hold true in most macroscopic systems. In some special microscopic or nanoscopic systems the second law would not be true. Breaking the second law of thermodynamics sounds like a crackpot idea, however since science is about falsifiable claims, we have to consider that the second law may be falsified. One cannot reject a device simply because the second law says it won't work – if the second law doesn't work itself, this is circular reasoning. I am not proposing that any of my devices in this paper have falsified the second law yet: they need to be tested.

The second law hopefully only holds true in macroscopic systems and it would be very spectacular if the second law could be violated at the mesoscopic or nanoscopic or microscopic realm. The Olson Time Arrow proposes that magnets can be used to sort information or energy, separating hot from cold. However not just magnets, but also a simple lever connected to a viscous fluid are proposed in the ping pong ball thought experiments. In other words: forget about making a brownian ratchet do work, just focus on separating hot from cold only – then use that hot and cold temperature differential to create a refrigerator or sterling engine. In this paper I propose separating hot from cold and completely abandon the complex brownian ratchet idea in favor of simpler designs.

Olson Container Information Theory



Every time a brownian motion object is collided and moves, in this container it has a higher chance of being near the top and bottom walls than the left and right walls. Although this seems trivial, it is important for understanding how to increase the probability of interacting with a chaotic random object in a constrained container.

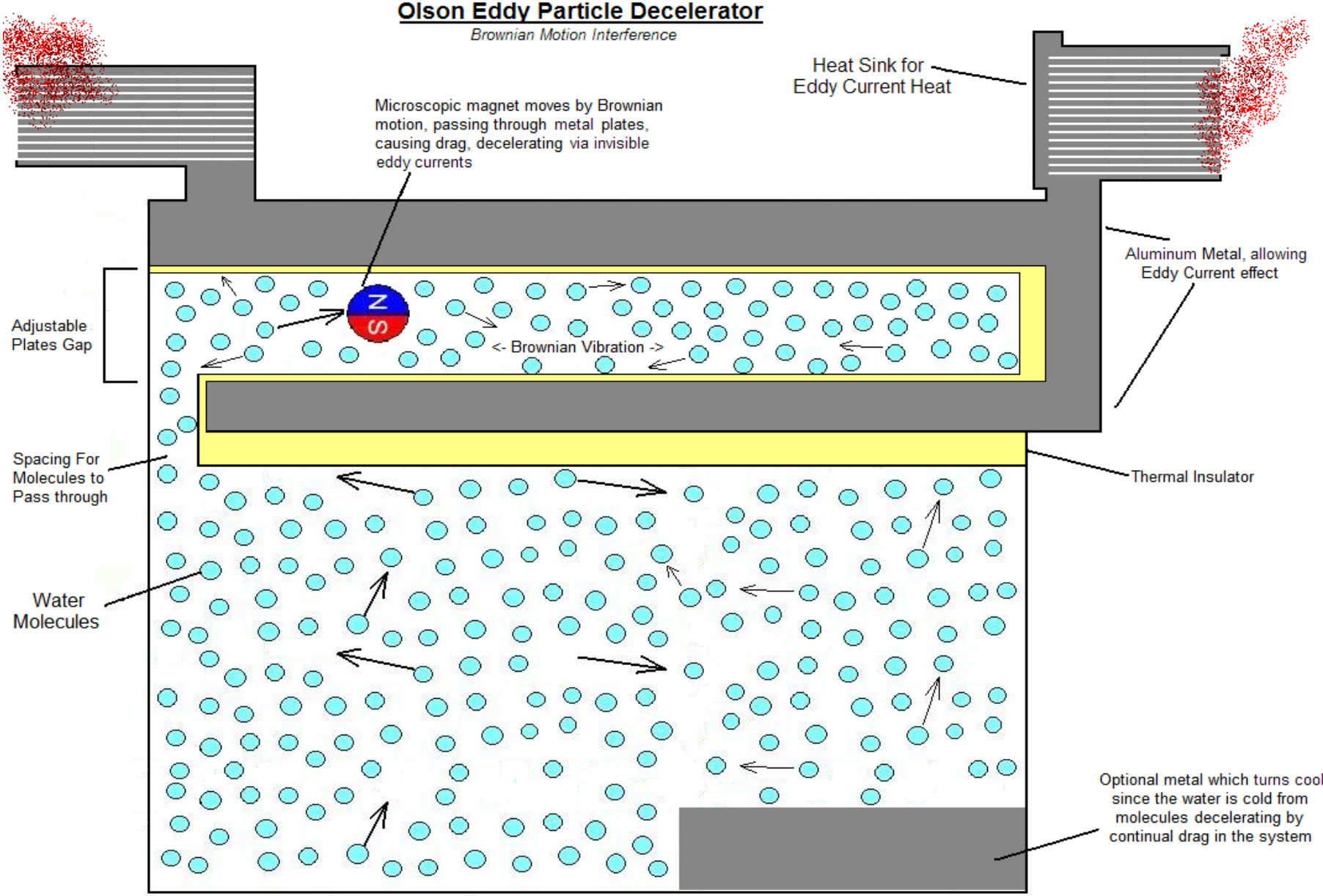
The probability of the object in the container coming into contact with the left and right side of the container is low since it is far away from those sides. The probability of the object coming into contact with the top and bottom is high since it is close to those edges at all times. Changing the lengths of each side of the container changes the probability. If the microscopic object presses a momentary bit switch (imaginary) which is on or off whenever it comes near a container wall, the switches which are fired the most will be the top and bottom switches if we consider each entire side (wall) of the container a long switch.

When a chaotic random object has a field, such as a nano magnet or microscopic magnet, those fields can interact with walls that react to the fields (i.e. eddy currents in aluminum, or responsive magnets in another container). If we increase the probability of interaction with the walls (container sides), we can increase the drag time on the microscopic object and potentially cool the fluid if it is possible to do so and this may send information out of the container.

The switches shown are not actual switches but are simply imaginary to show how some information is generated in a container. The switches are just virtual information that the brownian container can generate if humans wish to see it that way in order to find out information about the sy stem. I'm not suggesting there are actual bit switches in containers or brownian motion systems, although a nutty string theorist or quantum mechanic might suggest that this container is a computer program. Interesting questions to ask: is it 100 percent random or do we know some of the information and probability, therefore it is not completely random.. and can we use this information that is not random in order to exploit the second law of thermodynamics or further understand entropy, information and Shannon's theories?

Olson Eddy Particle Decelerator

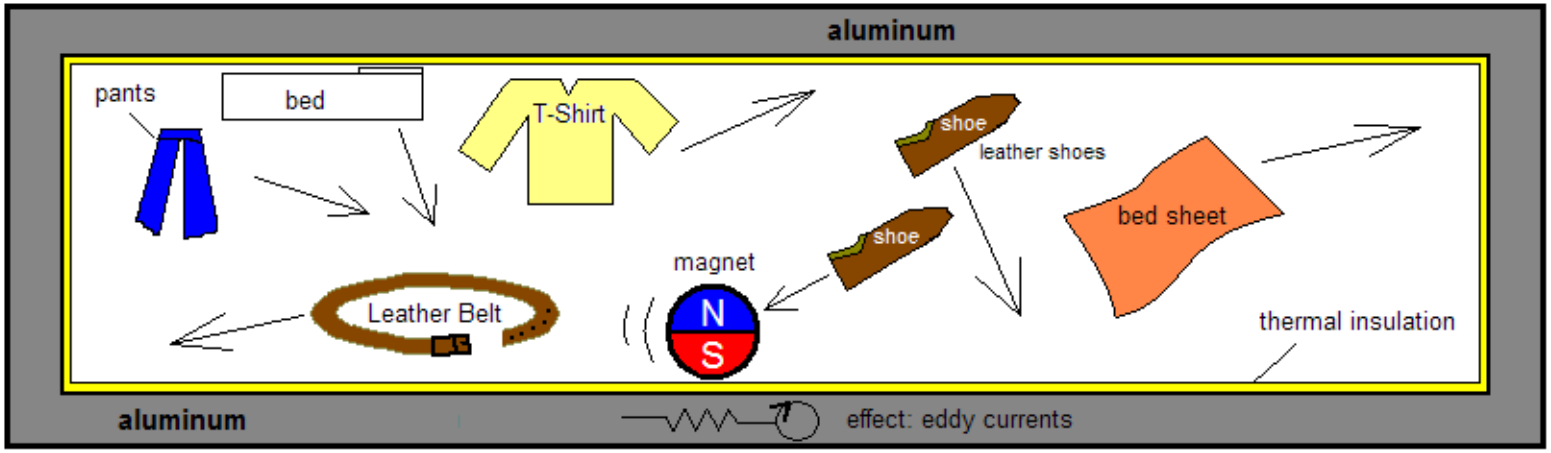
Brownian Motion Interference



In this device, a nano magnet vibrates randomly due to brownian motion in water. The magnet is slowed down by eddy currents in aluminum, and the heat given off by eddy currents is insulated. Does this device violate the 2nd law of thermodynamics? Falsification: the eddy currents would have to transfer an equal moving magnetic field due to Johnson/Nyquist noise. This would have to be tested to see if the eddy currents produce an equal responding magnetic field transferring heat back into the fluid.

Olson Messy Room Thought Experiment

static versus dynamic entropy



Why can a messy room not clean itself? The messy room analogy is not perfect since the items in the room are not mobile like particles. There is a difference between high entropy in an immobile disorganized static (stopped) state versus high entropy in a dynamic (mobile) state.

If the clothes and other objects in the room were all moving due to brownian motion, they would be dynamic. In the above thought experiment imagine clothes,shoes, and other objects moving randomly in a room which has aluminum walls. Imagine one magnet exists in the room which also moves randomly. The clothing and shoes bash into the magnet randomly.

If the clothing and shoes start out with an initial speed, after time they will come to a full stop due to eddy dampening from eddy currents generated in the aluminum by the magnet.

This is why the messy room analogy is not a tight analogy, since a messy room is not full of mobile moving objects by themselves. Whereas in a container of particles all the objects are moving. In the case of slowing down the particles in a liquid to cool it, the scientist does not care about the final order/positions of the particles if the goal is just to slow down the particles and cool them in a lower entropy state. As long as the fluid cools and the particles end up in any order clumped closer together, the scientist is satisfied with his goal of cooling the fluid down. Whereas with a messy room one wants to put the items back in certain places (dresser, closet, etc.) and the final positions of the objects matter. If the goal was to have all the objects in the messy room clump together in one pile, and they were all initially moving, the messy room analogy would be more direct. This is why analogies can be bad.

Can we cool a fluid by emulating a cold particle (causing drag) is the question to ask out of all these thought experiments. If so, then the second law is no longer true in those cases. It would be spectacular if the second law were falsified using nano technology, as then global warming could be solved. The heat death of the universe could also be stopped. This would answer Isaac Asimov's “The Last Question” of how entropy can be reversed.