Cubesat Propulsion With Magnets

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Cubesats are very small spacecraft in low Earth orbit. If a cubesat has propulsion on board it probably uses non-renewable fuel sources. I have designed and am developing a more efficient propulsion system for cubesats using the renewable energy sources already on board. My project aims to extend the mission life of cubesats and address some of the issues contributing to space junk. My system has four thrusters, two on the x-axis and two on the y-axis. The thrusters can be used for propulsion, attitude control, and orientation of the cubesat. Each thruster is a tube with a magnetized free floating center mass, on each end of the tube is a permanent magnet and electromagnet stacked. Polarization is arranged so the end magnets push the center mass away, keeping it centered. When one of the electromagnets is energized, it will push the center mass towards the opposite end very quickly, creating momentum and moving the satellite. Through electronic control of the electromagnet, thruster tubes can generate momentum towards either end of the tube, with variable amounts of force.