

## *2-Dimensional Personal Motion Energy Harvester for Low Power Electronics*

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In a lab, it becomes crucial to have a way to monitor that lab workers aren't exposed to too much radiation. Such a device that detects this should have an energy harvester so that batteries aren't required. The need for an energy harvester that generates power from a user's movements in 2 dimensions is needed. This energy harvester is needed to power a radiation monitor. An energy harvester that generates power based off movements in 2 dimensions was developed. The energy harvester was created through a series of prototypes. Each prototype was built from a CAD drawing and a stereolithography 3D printer. The device consists of a radially magnetized disk magnet at the center, and an opposite polarity ring magnet around it in repulsion of the center magnet. It was found that the motion of the levitating ring magnet causes electrical voltage through three coils placed on top of the harvester, where the circuitry for the radiation sensor is located. This energy can be stored in batteries on the device, or used immediately. The inclusion of an energy harvester is a crucial element of the radiation detector. It ensures that a device does not rely solely on batteries, or charging.