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#10-204 Radiation Sensor Based on PIN Photodiode

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The main idea of our project is to build a cheap gamma photon detector that can be assembled without buying expensive parts. This idea will be an Open Hardware Project so that everyone can try it out and make it better. The basis of this project is the ability of the photodiodes to react to the gamma particles that pass through them. Since photodiodes are inexpensive, this makes it possible to make the device cheaper than other radiation detectors (like the Geiger counter).

What components should be used?

- PIN photodiodes, - the usual Texas Instruments microcontroller (the cheapest one), - Wi-Fi and Bluetooth module (if necessary), - battery (if necessary), - MicroSD module (if necessary).

By connecting the photodiode to the microcontroller, we can begin downloading the software to the microcontroller, which will be in open access as well as other information in our project. The software was created by using libraries that are free and available on the Internet. After completing these steps, the device consider to be ready. (In case of using elements identical to ours, it may not even necessarily make a calibration). The next step might be to connect the battery. Due to the low voltage of the microcontroller, it can work from the battery for several months. Then by connecting the MicroSD module, appears the ability to store data on the memory card. Connecting the Wifi and Bluetooth module can view and manage the data wirelessly. Also, with good project prevalence, it will be possible to collect data from such detectors around the world and perform radiation analysis from all over the world and collect this information on the project server.

This solution allows us to make a cheap gamma photon detector by ourselves, using affordable parts and open source libraries.

Thanks for this project we can:

1) Construct an interesting and useful device;

2) Improve our technical skills;

3) Make a community for improving this project and creating new ones;

4) Give a start impulse for developers and engineers to make interesting and useful devices and projects for Open Source.

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