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The practical use of small cosmic ray detectors (e.g. Cosmic Watch) to conduct lectures and exercises in many fields of science

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In this article we show how to perform a set of very interesting lessons based on measurements of the cosmic muon flux, by using a set of two small and cheap cosmic ray detectors (in a coincidence mode). In a simple way we show the principles of building directional telescopes of such type of radiation, the influence of the measurement direction, measurement time and applied filters on the quality of the collected data. By analyzing the collected data, we intelligibly teach the principles of physics, estimation of measurement errors and a clear way of presenting the obtained results. The description of the aforementioned issues is based on several student internships conducted by the author in recent years which form a base to form conclusions that improve the educational value of this types of exercises.

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