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Silicon photomultiplier for space application

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The development of Silicon Photomultipliers (SiPMs) made great progress in the last years. Compared to conventional Multi Anode Photomultiplier Tubes (MAPMTs), SiPMs have several advantages like a low bias voltage and a robust structure, but also disadvantages like a high temperature dependence and a high dark count rate.
To investigate the possibility of replacing conventional MAPMTs with SiPMs, the 'Silicon Elementary Cell Add-on' (SiECA) is under development. The aim of SiECA is the detection of Ultra-High Energy Cosmic Rays (UHECRs) with SiPMs within the frame of the 'Extreme Universe Space Observatory' (EUSO) pathfinder experiment 'EUSO- Super Pressure Balloon'. In this context, 64 channel SiPM arrays of the newest series manufactured by Hamamatsu have been studied and characterized.
During the presentation, the working principle of SiPM will be described and an comparison to MAPMTs will be made. SiECA will be described and some characterization results of the newest SiPM series will be presented.

Primary author: Mr RENSCHLER, Max (Karlruher Institut für Technologie)

Co-authors: Mr HUBER, Thomas (Karlruher Institut für Technologie); Mr PAINTER, William (Karlruher Institut für Technologie)

Presenter: Mr RENSCHLER, Max (Karlruher Institut für Technologie)

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