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【385】 Micro-lens enhanced silicon photomultiplier arrays for the LHCb SciFi Tracker

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A new scintillating-fibre (SciFi) tracker is being installed and commissioned as part of the ongoing LHCb upgrade. As a consequence of the radiation the over-all light yield of the detector will be reduced in the course of LHC Run 3, compromising the hit detection efficiency. The inner modules will thus be replaced during the next long shutdown (2025–2027). For this occasion, a development of silicon photomultiplier arrays with micro-lenses has been started in order to improve the photon detection efficiency. The results of a ray-tracing simulation study, predicting up to 20% higher light yield, as well as measurements performed on first prototypes will be presented.

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