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Nuclear Instruments and Methods in Physics Research  
Section A: Accelerators, Spectrometers, Detectors and  
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Volume 582, Issue 3, 1 December 2007, Pages 876-885

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A novel monolithic pixelated particle detector implemented in high-voltage CMOS technology [†](#)

Ivan PeriÄ†

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<https://doi.org/10.1016/j.nima.2007.07.115>

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## Abstract

A new concept for monolithic pixel detector with 100% fill-factor is presented. The detection is based on the charge collection in the depleted zone of the reverse biased diode. Complex pixel electronics, including charge sensitive amplifier, amplitude discriminator and digital storage element is placed completely inside the diode cathode (N-well). A test chip that comprises a small pixel matrix and test structures has been fabricated in a **0.35  $\mu\text{m}$**  high-voltage CMOS process and successfully tested. The results of the electrical tests and measurements with X-ray and beta radioactive sources are presented.



## PACS

29.40.Gx; 29.40.Wk

### Keywords

Monolithic pixel detector; Monolithic active pixel sensor; MAPS; High-voltage CMOS technology; Deep N-well; Triple well

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<sup>†</sup> This paper draws on results from an ongoing research project commissioned by the Landesstiftung Baden-Württemberg.

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