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First Results on biased CMOS MAPS-On-DIAMOND devices

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A new type of device, the MAPS-on-Diamond, obtained bonding a thinned Monolithic Active Pixel Sensor (a RAPS03 thinned to 25 micrometers) to a standard 500 micrometer pCVD diamond substrate has been fabricated, allowing a highly segmented readout (10x10 micrometer pixel size) of the signal produced in the diamond substrate. A biasing scheme has been adopted for the device to allow the charge transport inside the diamond without disrupting the CMOS functionalities of the Active Pixel Sensor.
The device has then been calibrated with monochromatic X-rays, and tested with charged particles to verify the collection of the signal produced in the diamond substrate as a function of the device bias.

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