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UltraSiD, a novel 4D Sensor Concept

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We propose to develop a fast, thin silicon sensor with gain capable to concurrently measure with high precision the space
(~10 μm) and time (~10 ps) coordinates of a particle.
An integral part of the proposed sensors is the internal charge multiplication in silicon sensors, allowing to thin pixelated silicon sensors by at least a factor 10 and keeping the performance of thick sensors.
This will open up new application of silicon detector systems in many fields achieve four-dimensional high-precision
measurements. The basic sensor characteristics and the expected performance, the present status of sensors and readout electronics will be presented and the required R&D topics will be discussed.

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