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## 3D simulation and modeling of ultra-fast 3D silicon detectors

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3D simulation and modeling of 3D silicon detectors with short electrode spacing and relatively thin thickness ( $200\mu\text{m}$ ) have been showed in this paper. The column spacing  $L_p$  is in the range of  $5\mu\text{m}$  to  $10\mu\text{m}$ . At a bias voltage of only a few volts, this structure's response time can be as fast as  $10^1$ 's of ps. In this paper, we will report some simulated electrical characteristics of this detector structure through systematic 3D simulations by Silvacos TCAD tools. Detector electric potential, electric field, hole concentration, leakage current, and capacitance at various bias voltages will be presented. The full depletion voltages calculated by CV characteristics are compared by those obtained from potential and holes concentration profile simulations.

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**Session Classification:** After dinner POSTER session, with drinks: (All presenters are requested/encouraged to attend their posters; All participants are requested to participate the session, with drinks!)

**Track Classification:** Simulations and Manufacturing