

White Paper: “Novel Sensors for Particle Tracking: a Contribution to the Snowmass  
Community Planning Exercise of 2021”

Status Report

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11 November 2021

Instrumentation Frontier Working Group 3  
Solid State Detectors and Tracking

A complete first draft has been written. At present this paper absorbs the full text of the following LoI's:

#156: [https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3\\_IF0\\_H\\_Kagan-130.pdf](https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3_IF0_H_Kagan-130.pdf)

#158: [https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3\\_IF0\\_N\\_Fourches-107.pdf](https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3_IF0_N_Fourches-107.pdf)

#162: [https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3\\_IF0\\_Seidel-198.pdf](https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3_IF0_Seidel-198.pdf)

#165: [https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3\\_IF2\\_Jessica\\_Metcalf-154.pdf](https://www.snowmass21.org/docs/files/summaries/IF/SNOWMASS21-IF3_IF2_Jessica_Metcalf-154.pdf)

Structure of the paper:

9 pages long

Page 1 – Author list and abstract

Page 2 – I. Introduction, II. Silicon Sensors in 3D Technology (Boscardin, Dalla Betta, Hoferkamp, Seidel, Sultan)

Page 3 – III. 3D Diamond Detectors (Kagan, Trischuk)

Page 4 – IV. Beyond CMOS: Submicron Pixels for Vertexing (Fourches, Renard, Barbier)

Page 5 – V. Thin Film Detectors (Kim, Metcalfe, Sumant)

Page 6 – Thin Film, continued

Page 7 – VI. Conclusion, References

Pages 8-9 – References, continued

The envisioned main messages: All 4 research topics are active. Each section summarizes the present status and points to the open questions and future work. All groups welcome additional collaborators.

The sections vary in terms of the degree of research details provided.

Figures that were present in the LoI's have not yet been imported to the white paper.

The paper can easily be extended with additional sections to reflect text from investigators who did not write LoI's.

More results from all four teams are expected before the March 15 deadline, and these will be incorporated into this white paper.

This paper has not been uploaded to the arXiv but could be uploaded anytime as a preliminary version – to be updated later - if that is desired.