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Corrugated carbon composite disc design for the ePIC Silicon Vertex Tracker (SVT)

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Experiments at the future Electron-Ion Collider (EIC) pose stringent requirements on the tracking system for the measurement of the scattered electron and charged particles produced in the collision, as well as the position of the collision point and any decay vertices of hadrons containing heavy quarks. Monolithic Active Pixel Sensors (MAPS) offer the possibility of high granularity in combination with low power consumption and low mass, making them ideally suited for the inner tracker of the EIC detector(s). The forward discs are critical to the measurement of the scattered electron and thus minimizing the mass is crucial. To that end, we are developing a disc design for the ePIC Silicon Vertex Tracker (SVT) that makes use of a corrugated carbon fiber core to add strength and provide a channel for air cooling. In this talk, we will discuss the current disc design as well as the associated mechanical and thermal R&D.

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