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Ultra-lightweight materials and cooling systems for the new detector complexes with the highest radiation transparency

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In high energy physic experiments the new detector complexes with large granularity and the highest radiation transparency should be used for tracking of charged particles, providing minimal distortions due to the multiple scattering effects. In this case the minimum material budget is required for all materials have to be used within the sensitive area of the detective volume. This means that all parts of the detector complexes: sensors, microcables, support structures and cooling system must contain a minimum amounts of low-Z materials.
Therefore, the Ultra-lightweight carbon support structures with the gaseous cooling system for thin large area coordinate sensitive silicon pixel sensors were proposed.
For such support structures and cooling system the results of investigations of their main parameters are presented and discussed.

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