

Design and thermal test of the stave cooling plate

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The staves of the MPD-ITS detector will be composed by large arrays of Monolithic Active Pixel Sensors (MAPS) forming the cylindrical layers of the Inner Tracking System of the MPD experiment at NICA. These MAPS will be attached to a cooling plate for the power dissipation. Ultra-lightweight cooling concepts were put forward as a technical solution offering a good compromise among all constraints. The idea consists in embedding a lightweight cooling channel in a lightweight stave structure that provides mechanical and cooling capabilities at the same time. The materials delivering the best balance between material budget, thermal conductivity and stiffness are CFRPs. In this work it is presented the result of the comparison between the CERN-produced cooling plate and those developed on our lab.

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