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Temperature and Magnetic Diagnostic subsystem in LISA

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The SDS task is to measure various physical parameters of the spacecraft such as temperature, radiation, and magnetism, since all these magnitudes can induce forces on the test masses that could not be discerned from a gravitational force. In this talk, we will be focusing on the instrumentation of the SDS used for the magnetic and temperature subsystem. First of all, a review of the requirements for this instrumentation will be shown. Then, both subsystems will be introduced. This is, on one hand, the magnetic subsystem, which is based on two sensing instruments acting at different frequency ranges: an audio-band coil, sensing in the 50 Hz to 500 Hz range; and a low-frequency magnetometer, based on Anisotropic Magneto-Resistive (AMR) sensors, sensing in the LISA measurement band. And on the other hand, the temperature subsystem which includes two kind of resistive sensors, NTC thermistors and Platinum RTDs, and also heaters, used to inject test signals to characterize the test mass thermal behaviour. Finally, the current development stage for both subsystems will be shown.

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