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Modeling high impedance connecting links and cables below 1 Hz

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High impedance connecting links and cables are modeled at low frequency in terms of their parasitic impedance to ground and to neighbouring connecting links. The parasitic impedance is usually considered to be the parallel combination of a resistance and a capacitance. While this model is adequate at moderate and low frequency, it proved to be not satisfactory at very low frequency, in the fractions of Hz range. Deep characterization was carried out on some samples down to 10 μ Hz, showing that an additional contribution to capacitance can emerge. A model was developed to explain and account for this additional contribution. This contribution may impact the shape of signals in experiments which use high impedance sensors, such as the thermistors of the CUORE and Lucifer experiments.

for the collaboration

Lucifer

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