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## **Corrections of reducing the uncertainty of the self-heating in cryogenic temperature measurements of the highest accuracy**

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Self-heating of resistance thermometers is a well-known phenomenon, which occurs when the measuring current additionally heats up the sensing element. The temperature difference caused by the self-heating can be corrected by basic two-current method. However, in measurements of the highest accuracy, uncertainty of the self-heating correction, achieved by basic two-current method, may not be sufficient. More advanced methods for self-heating correction are proposed, based on the use of more than two different currents. Uncertainty of the self-heating for four methods (basic two-current method, three-current method, four-current method and five-current method) at different cryogenic temperatures is studied in this paper. The results show that the three-current method can decrease the uncertainty from 0.7 to 0.5 mK in 8 K, and from 0.84 to 0.64 mK in 10 K, compared with the two-current method. However, there is no remarkable difference between the three-current method and four-current method. In order to balance the computing time and precision, we should choose three-current method to correct the uncertainty of the self-heating.

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