Erratum

Melting Pressure Thermometry of the Saturated Helium Mixture at Millikelvin Temperatures

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The melting pressure of a ^3He – ^4He mixture has a very simple quadratic temperature dependence below some tens of mK, determined by the entropy of the ^3He component in the liquid mixture. For undersaturated mixtures, the melting pressure also depends on the ^3He concentration x , which may vary in the course of the experiment as ^4He transfers between the liquid and the solid phases. On the other hand, if the mixture is saturated, the system is in a univariant state with a melting pressure that depends uniquely on temperature and, thus, offers a thermometric standard. However, the univariant state

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includes a pure liquid ^3He phase, which complicates the temperature dependence around its superfluid transition temperature T_c . In this paper, we analyze the melting pressure of the saturated mixture in simple terms and find an expression that is in good agreement with our experimental data, and is applicable across T_c down to very low temperatures. The obtained derivatives of the melting pressure with respect to the square of temperature are $0.92 \text{ Pa} \leq mK^{-2}$ above T_c and $1.52 \text{ Pa} \leq mK^{-2}$ in the zero-temperature limit.

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