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## Thermodynamic properties of $^{185}\text{W}$ and $^{184}\text{W}$ Nuclei using modified Ginsburg-Landau theory

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### Abstract

In this paper, formulation of Modified Ginsberg – Landau theory of second grade phase transitions has been expressed. Using this theory, thermodynamic properties, such as heat capacity, energy, entropy and order parameters of  $^{185}\text{W}$  and  $^{184}\text{W}$  nuclei has been investigated. In the heat capacity curve, calculated according to temperature, a smooth peak is observed which is assumed to be a signature of transition from the paired phase to the normal phase of the nuclei. The same pattern is also observed in the experimental data of the heat capacity of the studied nuclei. Calculations of this model shows that, by increasing temperature, expectation value of the order parameter tends to zero with smoother slip, comparing with Ginsberg – Landau theory. This indicates that the pairing effect exists between nucleons even at high temperatures. The experimental data obtained confirms the results of the model qualitatively.

**Keywords:** phase transition, Ginsberg – Landau, fluctuations, pairing, order parameter

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