

On thermodynamics of rigid rotors in the field of centrifugal forces

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We consider thermodynamics of system of symmetric quantum rigid rotors that rotates with constant angular velocity. We show the free energy of the system is given by the sum of translational and rotational contributions. The rotational free energy is computed as the function of temperature and angular velocity. The angular velocity corrections to the thermodynamic potential are identified in the high-temperature limit. The main attention is paid to the rotational corrections to internal energy, entropy, and heat capacity.

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