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Theoretical Modeling of Infrared Thermography

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Abstract: Thermography is a non-destructive evaluation tool to measure the amount of infrared energy emitted by an object. This energy depends on temperature and wavelength and is described by Planck's law. From the solution of the wave equation the k -dependent photon energies and their density of states are calculated. The equation of state and a statistical description of the photon gas are presented. From the heat released during condensation and the heat capacity as a function of temperature T the dependence of the phase transition on the dimension d of the system is discussed. It is shown that only the one and two dimensional gas show a 2nd order phase transition while in the 3d case a 1st order phase transition is observed. Applications to real systems in nature are presented.

Apply to be considered for a student ; award (Yes / No)?

N/A

Level for award;(Hons, MSc, PhD, N/A)?

N/A

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