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Photon Gas in Plasma: Thermodynamics and Bose-Einstein Condensate

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The thermodynamical properties of the photon-plasma system had been studied using statistical physics approach. It is demonstrated that the presence of the plasma medium enables the photon gas to undergo a Bose-Einstein condensation by adjusting the relevant parameters to criticality. Planck's law of blackbody radiation is also modified with the appearance of a gap below the plasma frequency where a condensation peak of coherent radiation develops for the critical system.

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