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The H-theorem and equation of state for kinetic model of imperfect gas

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For molecules interacting among each other with the potential having both repulsive and attractive components, a system of kinetic equations is derived using the Bogolyubov method, which takes into account the effect of forming bound states by molecules. This system implies all conservation laws and their corollaries that are invariant under the Galilean transformation.

With consideration of the relaxation problem for the given system of kinetic equations, the H-theorem can be obtained. It is noted that the equation of state, which is derived in this case, coincides in form with the van der Waals equation of state.

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