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Quasiparticle energy functional for finite temperatures and effective Bose-condensate dynamics: A generalized theory and some illustrations

It is considered a generalization of the theory [1, 2] for the quasiparticle energy functional under non-zeroth temperatures and some its applications. A thermodynamical potential for multi-electron system in external stationary field for given temperature is defined by dynamics of effective Bose-condensate in atoms of the physical space of electrons. Structure of this space is defined by the cell system of surfaces of zeroth flux for entropy pulse under availability of the zeroth current of the Bose-condensate density. Dynamics of the Bose-condensate in a laser field [3] is effectively treated. We give some illustrations of the theory regarding the molecular structure mapping, a theory of semiconductors in a laser field etc. As an obvious perspective application of the presented theory it should be mentioned a hadrodynamics and quantum geometry too. [4, 5].

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