ENERGY WEIGHTED SUMS FOR COLLECTIVE EXCITATIONS IN NUCLEAR FERMI-LIQUID

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Model independent, m_1, adiabatic, m_{-1}, and high-energy, m_3, energy weighted sums (EWS) for the isoscalar and isovector nuclear excitations are investigated within the framework of the kinetic theory adapted to the description of a two-component nuclear Fermi-liquid. For both the adiabatic and scaling approximations, the connection of the EWS m_{-1} and m_3 to the nuclear stiffness coefficients and the first- and zero-sound velocities is established. We study the enhancement factor κ_I in the energy weighted sum m_1' for the isovector excitations and provide the reasonable explanation of the experimental exceeding of the 100% exhaustion of sum m_1' for the isovector giant dipole resonances. We show the dependence of the enhancement factor κ_I on the nuclear mass number A and analyze its dependence on the Landau's isovector amplitude F_1'.