The microscopic model of the real degenerated dwarfs with gravity and electrical interactions

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The relativistic parameter x_0 was evaluated using data obtained from the "Hipparcos" mission in frames of the standard Chandrasekhar model. This model considers only the relativistic degenerated electron gas contribution to inner pressure of the system and the gravity interaction continual distributed masses of nuclei. The parameter x_0 determines all star characteristics (mass, radius and the energy are monotonous function of x_0). The same calculations were done for the generalized model with non homogeneous chemical compositions that correspond to helium-hydrogen dwarfs. We found that $0.9 \leq x_0 \leq 1.5$ in central part of dwarfs. This means that the electronic system is near to relativistic degeneration but is not in ultrarelativistic state. In this case the general relativistic theory effects and influence of neutronization aren't important. Therefore the Chandrasekhar model in first approach is good approximation for real degenerated dwarfs. But this model can't explain variation of x_0 values and observed distribution of dwarfs over radii or masses.

We propose the dwarf model that considers not just gravity, but also electrical interactions. This model corresponds to nonhomogeneous metal model in the microscopic theory. The energy in this model was calculated in frames of the reference system approach with interacting relativistic electron gas model as the basis system. Characteristics of dwarfs as functions of x_0 are calculated using mechanical balance equation. To contrast to the Chandrasekhar model full energy obtained in our approach has nonmonotonous dependence from the parameter x_0. The minimum in this function approximately corresponds to observed maximum of real dwarfs distribution over radii.