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The development of spheroidal bodies theory for proto-planetary dynamics problem solving

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There is not a full statistical equilibrium in a gas-dust proto-planetary cloud because of long relaxation time for proto-planet formation in own gravitational field. This proto-planetary system behavior can be described by Jeans equation in partial derivations relatively a distribution function. The problem for finding a general solution of Jeans equation is connected directly with an analytical expression for potential of gravitational field. Thus, the determination of gravitational potential is the main problem of statistical dynamics for proto-planetary system. The work shows this task of proto-planetary dynamics can be solved on the basis of spheroidal bodies theory [1]-[4]**.** Within the framework of this theory, cosmological bodies have fuzzy outlines and are represented by means of spheroidal forms. The proposed theory follows from the conception for forming a spheroidal body as a proto-planet from dust-like nebula; it permits to derive the form of distribution functions for an immovable spheroidal body [1],[2] and rotating one [3],[4] as well as their density masses (gravitational potentials and strengths) and also to find the distribution function of specific angular momentum for the rotating spheroidal body [4].

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