Problem of the mass density of the E-corona

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Abstract. Problem of a derivation of the mass density of the E-corona as function of spherical coordinates was formulated.

1. *Introduction.*

Within the model of the exploding electron [1-3] we need in data on the distribution of the mass density in the explosion corona, E-corona, which extends from the extremely small radius r_c to $R_m \cong \lambda$ and has the shape of a sphere (Fig. 1). The corona components movement governed by the equations

$$v_r = c\,r/\lambda; \quad , \tag{1}$$

$$v_\tau = \sqrt{c^2 - v_r^2} = c\left[1-(r/\lambda)^2\right]^{1/2}; \tag{2}$$

$$v_{\tau z} = 0 \quad , \tag{3}$$

where v_r and v_τ are radial and tangential components of the sub-particle velocity, respectively; $v_{\tau z}$ is the projection of v_τ on the symmetry axis *z* (Fig. 1), *r* is radial coordinate of the sub-particle in the corona. The equations (1-3) uniquely follow from the assumption, that absolute speed of sub-particles is equal to speed of light, *c*. In doing so, if corona matter uniformly distributed, then the radial velocity component of the sub-particle is proportional to its distance from the explosion center as it is shown in (1). The averaged mass energy density is equal to

$$\rho \approx \frac{3M}{4\pi\lambda^3}, \tag{4}$$

where M is the total mass of the E-corona at the end of the explosion.

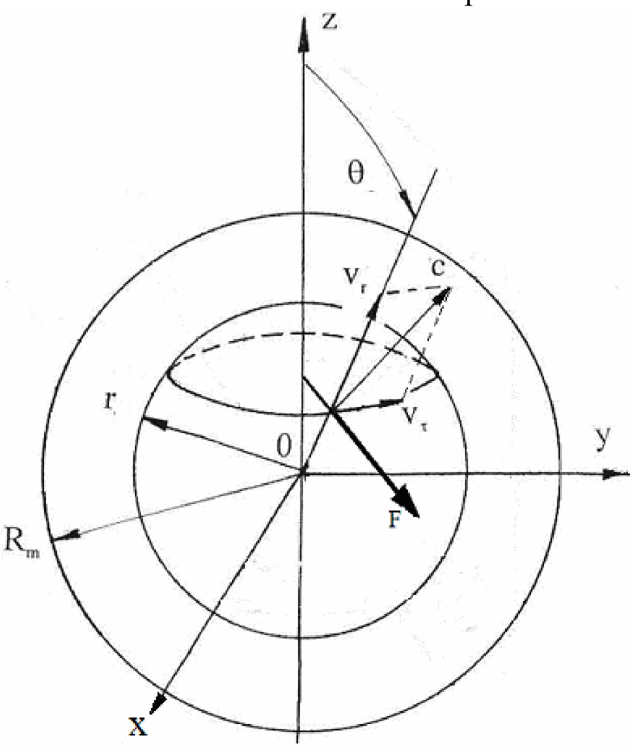

Fig. 1. The design scheme.

At the end of the explosion, when the outer radius becomes equal to $R_m \cong \lambda$, E-corona disintegrated into separate non-commuted subparticles.

2. Problem

Find mass density, $\rho(r,\theta)$, as a function of angle θ and radius *r* considering that centrifugal force

$$F = \frac{\Delta m \mathrm{v}_\tau^2}{\mathrm{r}\sin\theta} \tag{5}$$

acts on an element of mass

$$\Delta m = \rho(r,\theta)\Delta V\,, \tag{6}$$

where

$$\Delta V = 2\pi r^2 \sin\theta dr d\theta \tag{7}$$

is the annular volume element.

Referencess

[1] N. Dibrov On Working out a New Model of the Electron, *Phys. Essays* **16** (2003) 4-25.
[2] Nikolay Dibrov, “The Exploding Electron in Electrostatic Interaction and Motion”, *Journal of Vectorial Relativity*, Vol. 6, No. 1 (2011) 1-12
[3] Nikolay Dibrov, “Unified Model of Shadow-Gravity and the Exploding Electron” *Apeiron* **18** No 2 (April 2011) 43-83.