

# Fireball as a macroscopic manifestation of the $\beta$ decay of the radioactive phosphorus into bound states

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## **Abstract**

This paper substantiates a hypothesis that the natural fireball represents an area of space where the chain nuclear reaction of the bound-state  $\beta$ -decay of radioactive phosphorus nuclei takes place.

**Keywords:** fireball, radioactive phosphorus, nuclear reaction,  $\beta$ -decay, nucleus.

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## **References**

- [1] Ratis YL. *Natural Science. Economy. Management. Collection of scientific papers.* Samara: "SGAU" Publisher; 2003: 4.
- [2] Smirnov BM. *Physics of ball lightning.* *Sov Phys Usp* 1990; 33(4): 261-288.
- [3] Selinov IP. *Isotopes. Vol 1.* Moscow: "Nauka" Publisher; 1970.
- [4] Bahcall JN. *Theory of bound-state beta decay.* *Phys Rev* 1961; 124: 495.
- [5] Jung M, et al. *First observation of bound-state  $\beta^-$  decay.* *Phys Rev Lett* 1992; 69(15): 2164.
- [6] Bosh F, et al. *Observation of bound-state  $\beta^-$  decay of fully ionized  $^{187}\text{Re}$ :  $^{187}\text{Re}$ – $^{187}\text{Os}$  Cosmochronometry.* *Phys Rev Lett* 1996; 77(26): 5190.
- [7] Lal D, Narasappaya N, Zutshi PK. *Phosphorus isotopes P32 and P33 in rain water.* *Nucl Phys* 1957; 3(1): 69-75.
- [8] Gareev FA, Ratis YL. *Natural Science. Economy. Management. Collection of scientific papers dedicated to the memory of A.I. Fedosov, Vypusk 3.* Samara: "SGAU" Publisher; 2002; 1: 103.