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Comparative Analyses of the Stellar and Galactic Processes in Different Spectrum of Electromagnet Radiation at Space Laboratories

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Abstract. In these work we consider the basic problems of astrophysical observation. We recommend new two principles of astrophysical observation. According to the minimal principle we can in the near future create sinchron virtual laboratory combining the Space and ground-based one.

Keywords: spectrum, ground-based astronomical telescopes, astrophysical observation, sinchron virtual laboratory, optic band, supernova.

Traditional investigation of stellar and galactic processes and their developments based on using electromagnetic radiation in different ground-based astronomical telescopes. The energy levels of atoms and molecules have an important implication for observational astronomy because ground-based observations can detect only radiation that can penetrate through the Earth's atmosphere. The atoms of most elements have energy levels of the order of E ~ 10 eV. Using the relation between photon energy and wavelength, (E/eV) ~(12345/$\boldsymbol{\lambda}$)Å, we conclude that photons with $\boldsymbol{\lambda}\leq 10^3$ Å will be absorbed by the atmosphere of the Earth, leading to ionisation of the upper layers. Further, the rotational and the vibrational energy levels of molecules like H_2O and CO_2 (which exist in the atmosphere) fall in the IR band and this causes the IR radiation also to be absorbed by the Earth atmosphere, although to somewhat lesser degree than the higher energy radiation. Because of these effects, the ground-based observations are essentially limited to visible ~5000 Å and radio ($\boldsymbol{\lambda}$> 1 cm, $\boldsymbol{\nu}$< 3 x10^{10} Hz) waves. There is, however, another limitation arising from the fact that very long-wavelength radiation ($\boldsymbol{\lambda}$~100m) cannot propagate through the plasma in the ionosphere and is reflected back. To obtain information about all other wavelength regimes, it is necessary to make observations from high altitudes, for example, from balloons, aircrafts, spacecrafts, satellites, etc.[1,2]

It is obvious that the kind of technology required for successfully operating a space-based observatory is quite different (and more difficult) compared with that for ground-based observations. As a result, the quality and quantity of data available in different wave bands can be significantly different. For instance on the Sunspote the temperature in optic band is about 4500^0 K. The Habble Space x-ray band telescope give more 1.5x$10^6 K^0$. The reason for differencies the two value that many atoms lose its external optic electrons and work X-Ray radiation canals. In the Solar corona the temperature is about 3 million degree.

Modern developments of the Space apparatus give us possibility observation the nature of stellar and galactic processes and its spectrum of the electromagnetic radiations. In our opinion to study the nature of stars and galaxies we must adopt as basis following principle I (or minimal principle**). To state of the external nature and its processes of the stars and galaxies necessary investigation of complete spectrum electromagnetic radiations.**

For example, we can use the minimal principle of the electromagnetic observation of the stars and galaxies in the galaxy M-84 in optic band (picture-1).We can observe egg form of the M-84 galaxy. Observing the galaxy M-84 in the radio band (2-picture) we can see the black hole and its jets. In the optic and radio band we can see two different pictures.

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FIG.1. View of the M-84 galaxy
In optic band

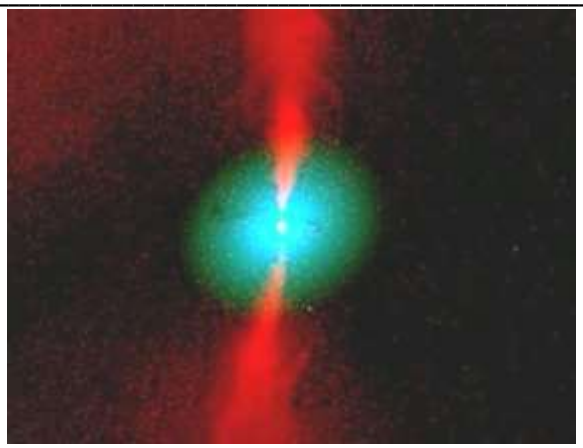

FIG.2. View of the M-84 galaxy
in radio band

In the pictures 3 and 4 in the optic and radio band we can see stellar(SN-1054) explosion. In picture 4 in the radio band seen pulsar or neutron star in the center. In picture 3 in the optic band the pulsar absent. In the radio band neutron star is present as radiosource.We observe two different type pictures.

In the optic band in the Space a supernova (SN) explosion is observed on average in 100 years. In the x-ray band frenquency observation supernova explosion to take place daiIy event in the Space. In the picture 5- and 6 in Space view in the optic and X-Ray band [3].

The bringing facts in the optic and the x-ray band differ about 10000 times. This

facts indicate rightness of our the astrophysical minimal principle(I) of observation with full spectrum of the electromagnet rays. To certify external nature of the stars and galaxies it is necessary minimal principle (I). The word minimal means in order to observation we must at least use only full spectrum of electromagnet radiation.

FIG.3. The Crabs supernova explosion
In optic band.

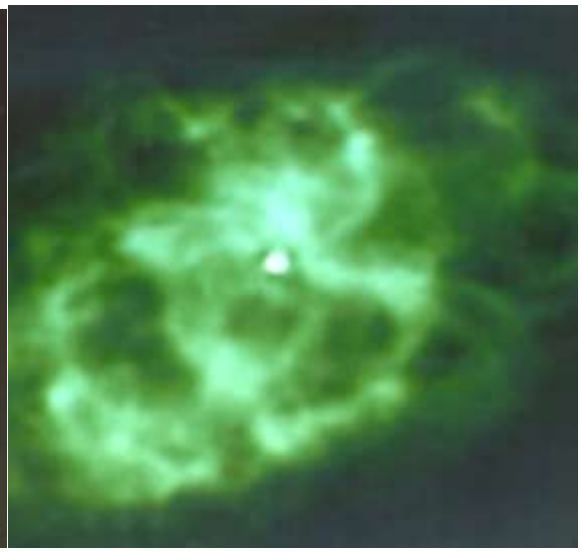

FIG.4. Pulsar(neytron Star).
In radio band.

For complete observation including the internal nature of stars and galaxies we must use all electromagnetic radiations (photons), other fundamental particles, elementary particles, nucleis and statistical fields. This is the meaning of maximal principle (II) of observation. The realization of maximal principle may take very long time in the future.

According to the minimal principle we can in the near future create sinchron virtual laboratory combining the Space and ground-based one. These laboratories can be near constatation truth factic picture for the astrophysical objects. The Space and ground-based telescopes must be simultaneously directed to the same astrophysical objects.

References

1. [1]Sattorov I. Astrofizika.-Tashkent, Turon –Iqbol,2007. -350 p.
2. [2]Padmanabhan T. Theoretical astrophysics. Cambridge University press. 2010. Vol. 1, -456 p., Vol. 2, -570 p., Vol.3, -620 p.
3. [3] Arnett D. Supernova and Nucleosynthesis. Princeton Univ. Press. Princetion, NJ, 1996. -370 p.
4. Rasulov, V. R., et al. "Interband Multiphoton Absorption of Light in Narrow-Gap Crystals." *European Journal of Applied Physics* 3.5 (2021): 51-57.
5. Расулов, Р. Я., et al. "К теории трех и четырех фотонного линейно-циркулярного дихроизма в p-GaAs." *«Узбекский физический журнал»* 23.4 (2021).
6. Расулов, Вохоб Рустамович, et al. "МЕЖДУЗОННОЕ ТРЕХФОТОННОЕ ПОГЛОЩЕНИЕ В INSB." (2021): 143-148.
7. Расулов, Р., et al. "К ТЕОРИИ РАЗМЕРНОГО КВАНТОВАНИЯ В КВАНТОВОЙ ЯМЕ p-Te." *Deutsche Internationale Zeitschrift für zeitgenössische Wissenschaft* 22 (2021): 62-66.
8. Rasulov, Voxob Rustamovich, Rustam Yavkachovich Rasulov, and Mavzurjon Xursandboyevich Qo'chqorov. "POLARIZATION AND FREQUENCY-POLARIZATION DEPENDENCES OF THREE-PHOTON INTERBAND LINEAR-CIRCULAR DICHROISM IN SEMICONDUCTORS OF CUBIC SYMMETRY." *EPRA International Journal of Multidisciplinary Research (IJMR)* 8.1 (2022): 91-96.
9. Rustamovich, Rasulov Voxob, et al. "INVESTIGATION OF SIZE QUANTIZATION IN A GYROTROPIC SEMICONDUCTOR." *European science review* 9-10 (2021): 22-26.
10. Расулов, Р. Я., et al. "ПОЛЯРИЗАЦИОННЫЕ И ЧАСТОТНО-ПОЛЯРИЗАЦИОННЫЕ ЗАВИСИМОСТИ ТРЕХФОТОННОГО ПОГЛОЩЕНИЯ СВЕТА В КРИСТАЛЛАХ." *FUNDAMENTAL SCIENCE AND TECHNOLOGY*. 2021.
11. Жумакулов, Х., & Жаров, В. К. (2019). О статистической безграмотности выпускников педагогических вузов и не только. In *Международный гуманитарный научный форум" Гуманитарные чтения РГГУ-2019" Непрерывность и разрывы: социально-гуманитарные измерения"* (pp. 119-123).
12. Хусанбаев, Я. М., & Жумакулов, Х. К. (2017). О сходимости почти критических ветвящихся процессов с иммиграцией к детерминированному процессу. *O 'ZBEKISTON MATEMATIKA JURNALI*, 142.
13. Жумақулов, Х. К., & Салимов, М. (2016). О МЕТОДАХ ПРОВЕДЕНИЯ И СТРУКТУРЕ ПЕДАГОГИЧЕСКОГО ЭКСПЕРИМЕНТА. *Главный редактор*, 80.
14. Soboleva, E. V., Zhumakulov, K. K., Umurkulov, K. P., Ibragimov, G. I., Kochneva, L. V., & Timofeeva, M. O. (2022). Developing a personalised learning model based on interactive novels to improve the quality of mathematics education. *Eurasia Journal of Mathematics, Science and Technology Education*, *18*(2), em2078.
15. Ummatovich, K. M., Erkinjonovich, O. S., & Rahimovna, S. F. (2019). The Role Of Small Business And Private Entrepreneurship In Civil Society. *Frontiers in Finance & Economics*, *16*(2).
16. Xalmatjanova, G., & Sadikova, F. (2022). The Importance of the Cluster Method of Production in Agriculture. *Texas Journal of Agriculture and Biological Sciences*, *5*, 10-13.
17. Jakbarovich, S. B., & Rahimovna, S. F. (2020). SMALL BUSINESS AND PRIVATE ENTREPRENEURS AS THE SOCIO-ECONOMIC BASIS OF CIVIL SOCIETY. *MODERN VIEWS AND RESEARCH*, *1*, 36.
18. Садыкова, Ф. (2022). ҚИШЛОҚ ХЎЖАЛИГИ МУАММОЛАРИНИ ҲАЛ ҚИЛИШГА ЙЎНАЛТИРИЛГАН ИНВЕСТИЦИЯЛАР САМАРАДОРЛИГИ: https://doi. org/10.55439/ECED/vol23_iss3/a18. *Экономика и образование*, *23*(3), 120-126.

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