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Development of methods for creating sensitive receivers for the detection of distant quasars

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There are not many more effective methods for researching the structure of the universe. However, there are opportunities that will allow to adjust some circumstances. First of all, there is an opportunity to determine the distribution of extragalactic sources with the help of quasar studies, to have more accurate data. Quasars being the brightest sources in the Universe, they can be observed at great distances. We need methods that will allow us to detect all quasars at certain distances. The absolute magnitudes of quasars are brighter than magnitude -23m, and observations are needed to detect all quasars at least at certain distances. To have complete data up to distances z=3-4, observations with sensitive telescopes are necessary. Quasars are rich in hydrogen, and with the help of hydrogen lines, spectral studies can be performed, even if only in one line, and the distance of a given quasar can be found. There are at least a few ranges where we can make observations and estimate distances. The first range is the infrared range, the second is optical, and the third is X-ray. Since quasars are rich in hydrogen, with the help of the Hα line, if you have sensitive receivers in the infrared range, you can observe weak quasars, with the help of Lα, you can get the necessary data in the optical range, when conducting studies in the X-ray range, you can use the channeling phenomenon as an amplifier and prepare a receiver in that range and have a sensitive a device that will allow to detect and measure the red shifts of distant quasars, to construct their distributions. This work is dedicated to the problem of having sensitive receivers in the specified ranges. If we can get a receiver that can detect quasars at red shifts of 3.4 and beyond, we can greatly improve our understanding of whether the Universe is homogeneous or inhomogeneous.

Primary authors: Mr MAHTESSIAN, Lazar (Institute of Applied Problems of Physics NAS RA); HOVHANNISYAN, Martik (Institute of Applied Problems of Physics NAS RA); Ms KARAPETYAN, Roza (Institute of Applied Problems of Physics NAS RA); Dr MKHITARYAN, Samvel (Institute of applied problems of Physics NAS RA); DABAGOV, Sultan (Istituto Nazionale di Fisica Nucleare)

Presenter: HOVHANNISYAN, Martik (Institute of Applied Problems of Physics NAS RA)

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