

# Detailed investigation of QSO 1055+01

Mahtessian L.A.<sup>1</sup>, Hovhannisyanyan M.A.\*<sup>1</sup>, Karapetyan R.A.<sup>1,2</sup>, Amiraghyan L.A.<sup>1,2</sup>, Grigoryan M.L.<sup>1</sup>, and Mahtessian A.P.<sup>3</sup>

<sup>1</sup>NAS RA Institute of Applied Problems of Physics, Armenia

<sup>2</sup>Yerevan State University, Armenia

<sup>3</sup>NAS RA V. Ambartsumian Byurakan Astrophysical Observatory (BAO), Armenia

## Abstract

QSO 1055+01 studies show that this extended quasar is a very, powerful, active and variable extragalactic source, with many compact sources around. We shown that the distribution of extragalactic sources around is homogenous with high density.

**Keywords:** *radio galaxy, quasar, homogeneous, inhomogeneous*

## 1. Introduction

Being a sufficiently powerful source across the entire spectrum of electromagnetic waves, including the radio range, detailed studies of QSO 1055+01 can reveal a number of cosmic phenomena that other sources are less likely to detect. In addition, there are many compact sources around this object. Considering the distance of QSO 1055+01 ( $d$  is about 4000 Mps,  $v=267886$  km/s,  $z=0.89357$ ), the apparent magnitude ( $m_v=16.68$ ), and the angular size (6.74 arcsec), one can say that it has the size of a supergiant galaxy. Obviously, this is a fairly powerful object that has a significant impact on the immediate environment. The above is based on the results of numerous studies (Healey et al., 2008, Hutchings & Bianchi, 2010, Plotkin et al., 2008, Slee, 1995, Wang et al., 2016), which indicate that QSO 1055+01 is a powerful, young, rather extensive and very active source.

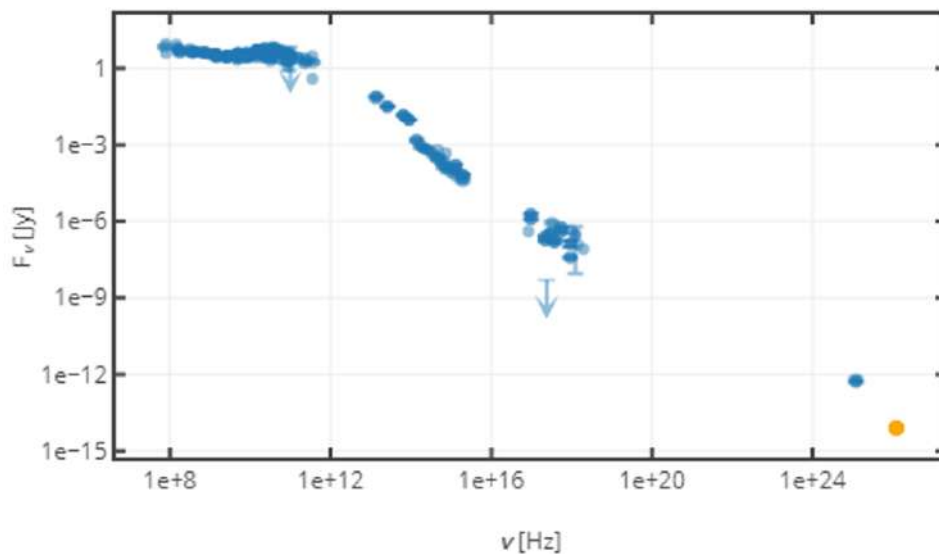


Figure 1. The spectrum of quasar 1055+01

\*martik.hovhannisyanyan1956@gmail.com, Corresponding author

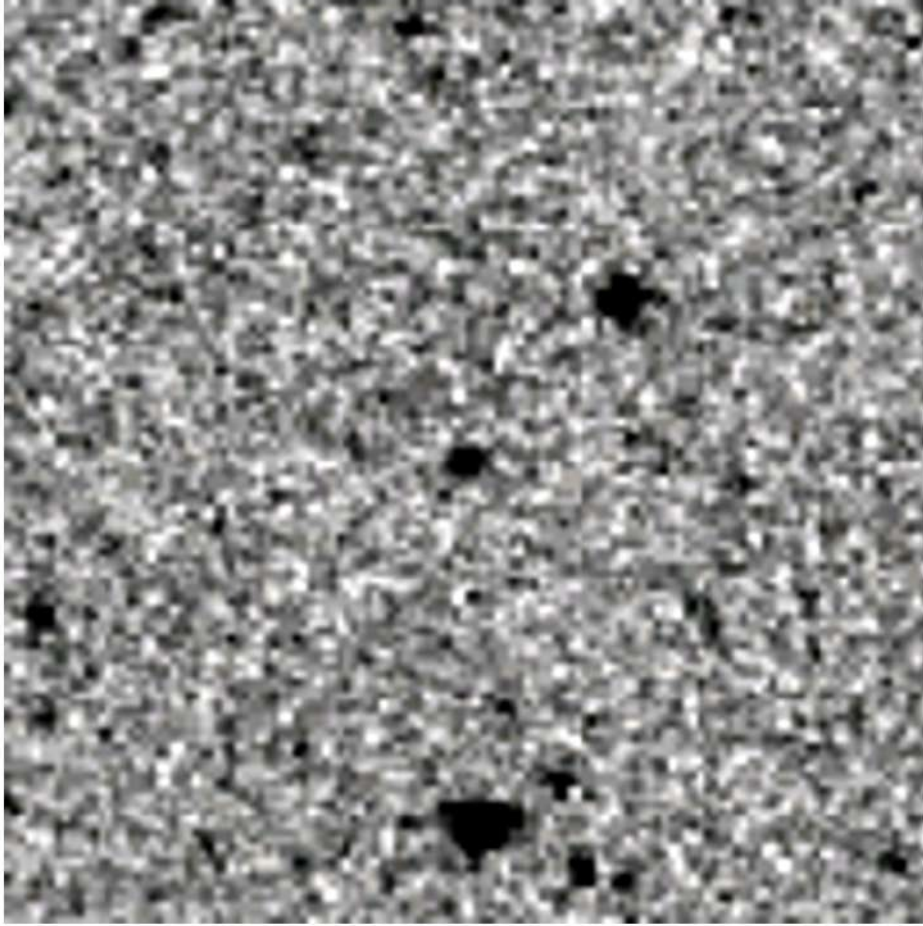


Figure 2. The optical image of quasar 1055+01

## 2. Quasar 1055+01 and its surroundings

The data of numerous observations of QSO 1055+01 are presented in Figure 1, where it is clearly seen that the spectrum of the radio source of the quasar in the radio range is flat from 70 MHz to 700 GHz. This indicates that the radio source is very young. As the frequency increases from the optical range to the X-ray range, the intensity decreases and further decreases at higher frequencies. This fact shows that sources emitting at low frequencies are different from sources emitting at high frequencies. Images obtained from optical observations suggest that the quasar is compact and has a diffuse component (see Figure 2). Quasar 1055+01 has strong radiation, powerfully compact and widespread components, as well as near and distance sources. Of greatest interest is the distance source, its features. Since the observational data of distant sources, due to their distance, are data of a younger age, therefore it is possible to see phenomena that are specific to young and active sources. The studies of the surroundings of the quasar 1055+01 are indeed very interesting and with the help of these studies it is possible to find out the mutual influence of the quasar and its surroundings. Figure 3 shows the distribution of galaxies around this quasar. It can be seen from the figure that the galaxies in that range are distributed in such a way that it can be said that the distribution is very close to the state of homogeneous distribution despite the fact that the number of galaxies in some range is small (Figure 8). The distribution of galaxy clusters and quasars is fully sufficient to assert that these sources are distributed evenly around the quasar and the entire range is homogeneous (Figures 4, 5, 6, and 7).

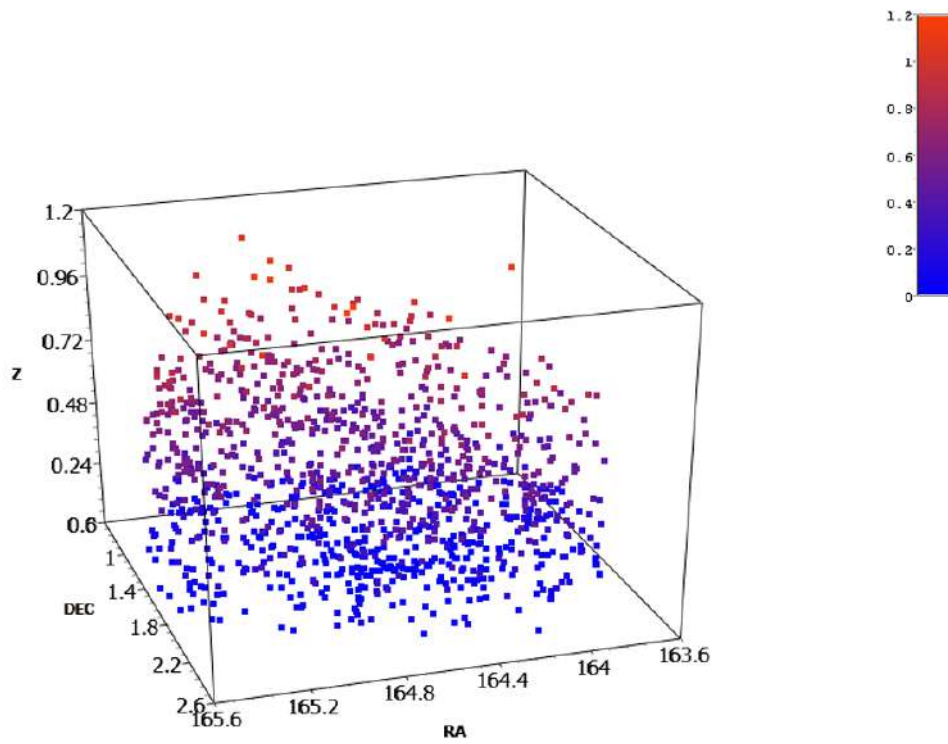


Figure 3. The dimensional distribution of galaxies

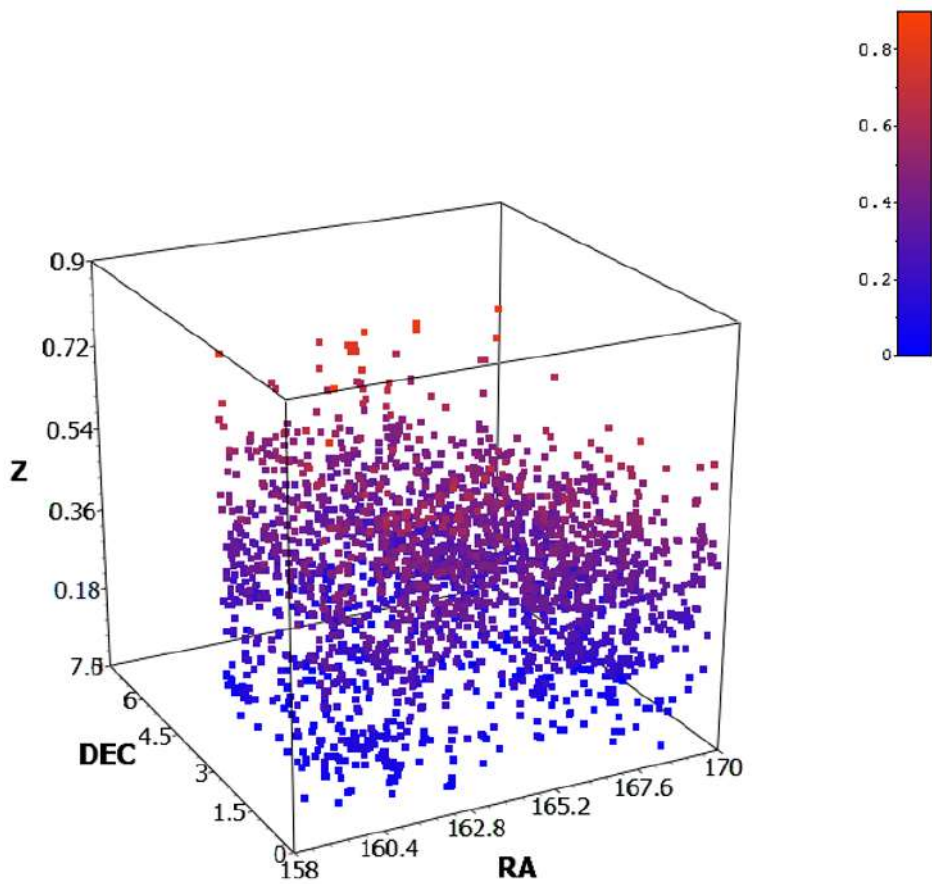


Figure 4. The dimensional distribution of galaxy clusters

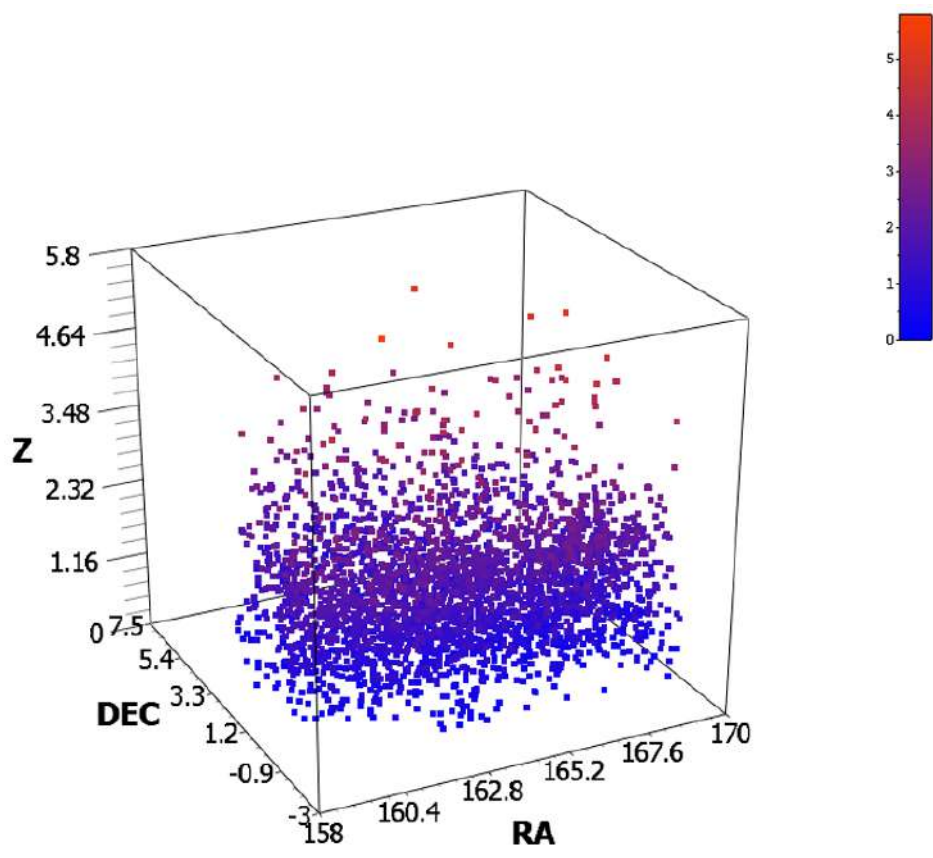


Figure 5. The dimensional distribution of quasars

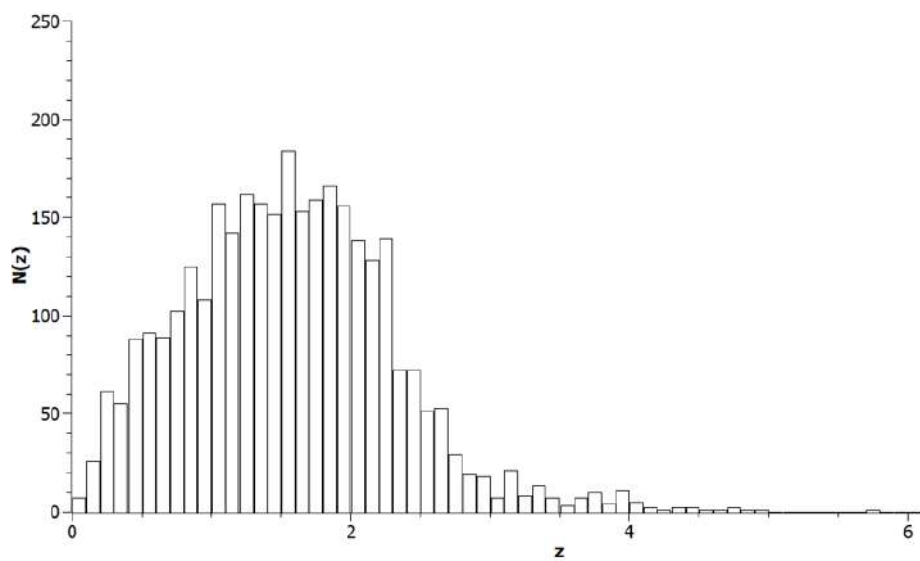


Figure 6. The distribution of redshift of quasars

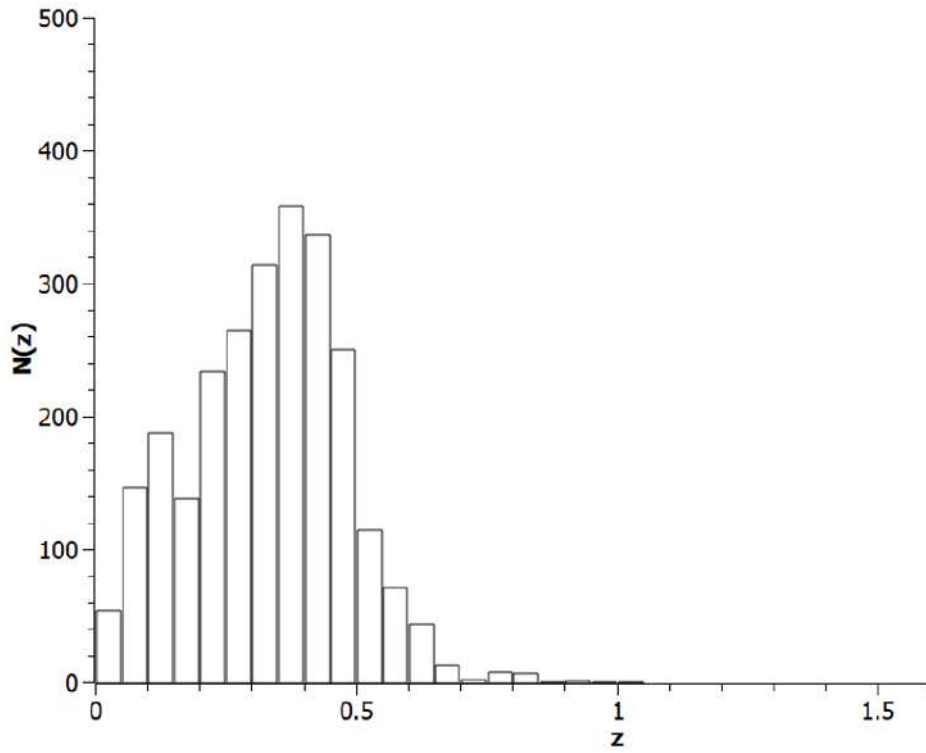


Figure 7. The distribution of redshift of galaxy clusters

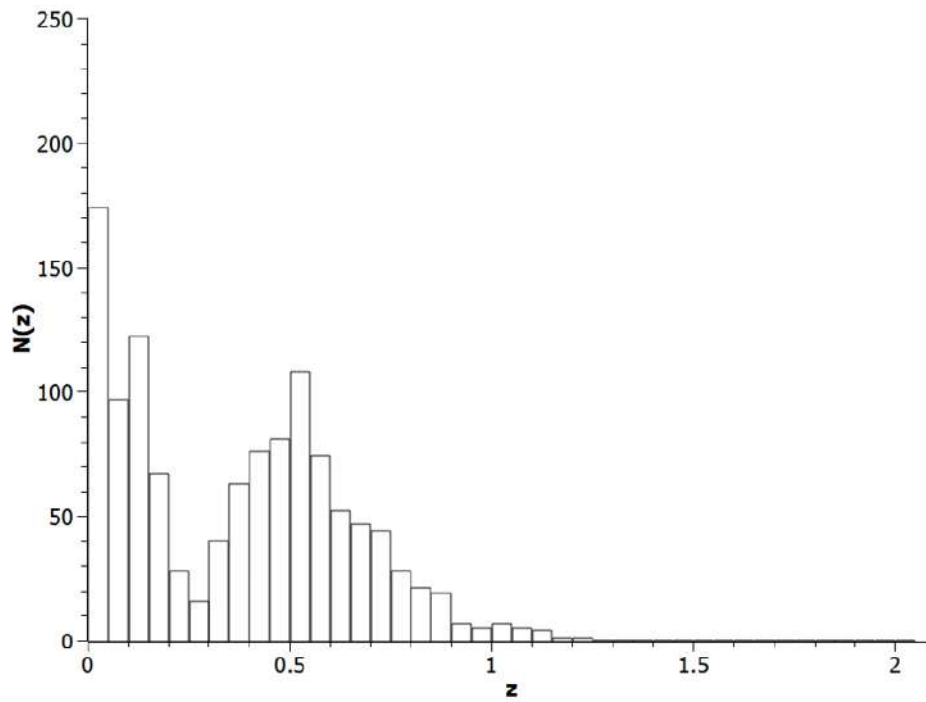


Figure 8. The distribution of redshift of galaxy

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