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ΠΡΟΕΔΡΙΑ ΠΕΤΡΟΥ ΧΑΡΗ

ΑΣΤΡΟΝΟΜΙΑ.— **Preliminary Results on the Discovery of Two Possible Galaxies in Cepheus,** *by J. Xanthakis and C. Poulakos**.

Ἀνεκοινώθη ὑπὸ τοῦ Ἀκαδημαϊκοῦ κ. Ἰωάννου Ξανθάκη.

SUMMARY

Two new emission infrared objects both of elliptical shape have been found on the Palomar Observatory Sky Survey charts. They are probably distant Galaxies, but spectroscopic verification is needed.

On a survey for extremely red stars by use of transparent reproductions of the red and blue POSS charts, which had a scale of three times that of the original POSS charts, our attention was attracted by two peculiar objects of non stellar appearance. They were extended objects of extremely red colour. These objects, so far as we could find out, are not included in the various lists and catalogues of galaxies (Nilson, 1973), planetary nebulae (Abel, 1966 ; Perek and Kohoutek, 1967), nebulae and radio sources.

In the present note our preliminary results were derived from the POSS charts but further observation of the objects is needed.

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* Ι. ΞΑΝΘΑΚΗ καὶ Κ. ΠΟΥΛΑΚΟΥ, **Δύο νέοι πιθανοὶ Γαλαξίαι εἰς τὴν περιοχὴν τοῦ Κηφέως. Πρῶτα ἀποτελέσματα.**

Object 1.

This object is clearly visible on the POSS charts centered at $21^h\ 28^m$, $+\ 78°$. It lies 24.7 mm from the southern and 88.6 mm from the eastern rim of the POSS print.

On the red POSS chart a clearly elliptical core with a major axis of 15″ lenght can be seen. The core is surrounded by a faint halo which is more or less diffuse toward Nord-East while toward South-West the object shows a very sharp wedge. In the center of the object and per-

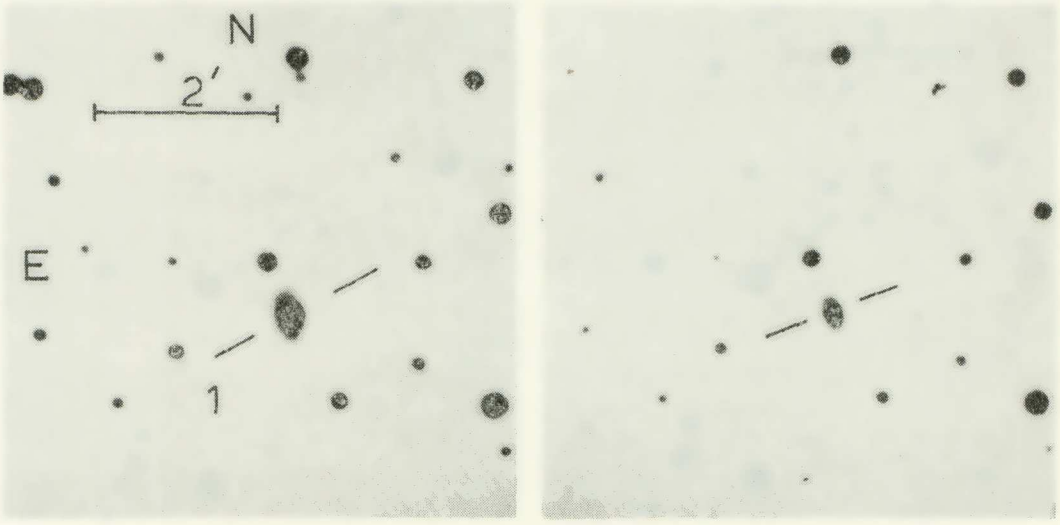

Fig. 1a and b. Identification of object 1 on the red (left) and the blue (right) POSS charts. North is up, east is to the left. Scale, 12.25 mm correspond to 1 arc minute.

pendicularly to the major axis the halo is very dense. On the blue colour the object appears less conspicuous where the surface brightness is much lower and it appears half as large as on the red colour. The position of the object is $\alpha = 21^h\,52^m\,34^s$, $\delta = +\ 75°\ 14'26''$ (1950). The dimensions are $26''\times13''$. The object 1 is shown in Figs. 1a and 1b which are enlargements of the red and the blue POSS prints respectively.

Although no direct estimate of the apparent magnitude of the object 1 is possible, due to the lack of deep red photometric sequence in

this field, we determine that its apparent magnitude must be, approximately, between 17^m - $17^m.5$.

Object 2.

This object lies 4'.8 South-West of object 1 and 20.6 mm and 90.7 mm from the southern and the eastern rim of the POSS print.

Object 2 is of extended appearance with a central core and an extended halo which is clearly visible on both the eastern and the

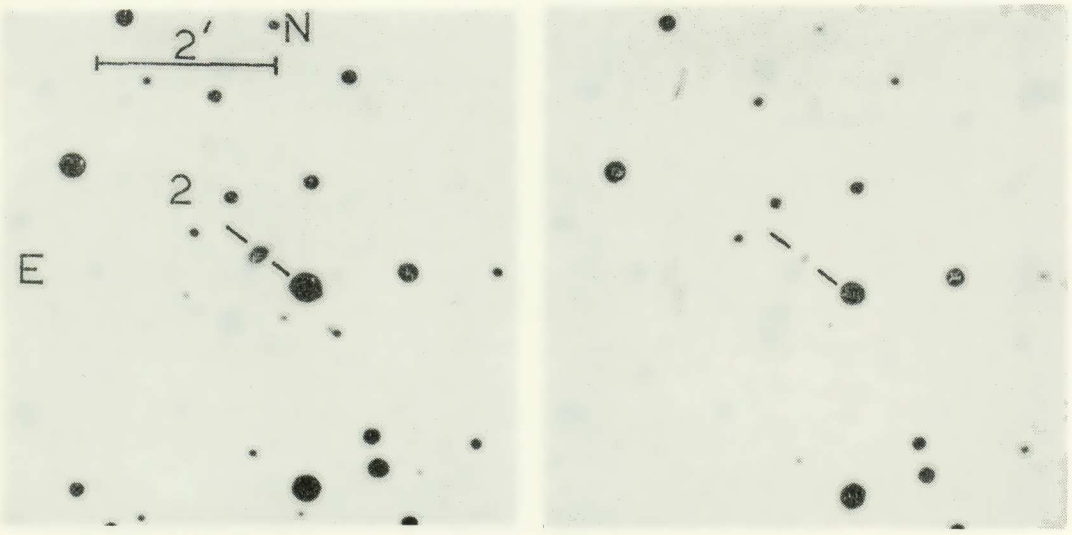

Fig. 2a and b. Identification of object 2 on the red (left) and the blue (right) POSS charts. North is up, east is to the left. Scale, 12.25 mm correspond to 1 arc minute.

western side of the elliptical shape. On the blue POSS chart object 2 is barely visible but the existence of its extended halo is still visible. The core on the blue colour appears near the limit of the plate. The position of object 2 is $\alpha = 21^h\,51^m\,46^s$, $\delta = +75°\,09'\,48''$. The size is $16'' \times 7''.5$.

The angle between the two major axes of the objects 1 and 2 is approximately 72°.

Figures 2a and 2b which are enlargements of the red and the blue POSS prints show the object 2.

Table 1 summarizes the main parameters of object 1 and object 2.

TABLE 1

Observed sizes and positions of Objects 1 and 2.

	Object 1	Object 2
R. A. (1950.0)	$21^h 52^m 34^s$	$21^h 51^m 46^s$
Decl. (1950.0)	$+75° 14' 26''$	$+75° 09' 48''$
l : 112°.35		112°.25
b : 16°.41		16°.38
Total extension	$26'' \times 13''$	$16'' \times 7.5''$
Core	$15'' \times 10''$	$8'' \times 4''$

Unfortunately the foreground extinction in this direction is not known. Considerable fluctuation of the extinction in this region is clearly visible on the POSS prints, which show NE of object 1, a moderate dark cloud. However, in the catalogue of dark nebulae (Lynds, 1962) three types of small dark clouds are present very close to the objects 1 and 2. On the other hand in the direction of the objects 1 and 2 the existence of high velocity clouds of neutral hydrogen (Hulsbosch, 1974) should also be taken into considaration for the calculation of the absorption in this region.

CONCLUSION

We presume that the objects 1 and 2 due to their general morphological characteristics, their elliptical shape and their extended halo are galaxies. Object 1 is probably of elliptical type E6. The question for object 2 is open. They are both extremely red.

The true nature of Objects 1 and 2 still requires confirmation by spectroscopic observation.

It is our pleasure to thank Mr. Th. Zachariadis for his skill in copying the photographic plates and for making available numerous reproductions of the POSS prints.

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ΠΕΡΙΛΗΨΙΣ

Κατὰ τὴν διάρκειαν μιᾶς ἐρεύνης διὰ τὴν ἀνεύρεσιν ὑπερύθρων ἀστέρων ὁ ἐπιμελητὴς τοῦ Κέντρου Ἐρευνῶν Ἀστρονομίας τῆς Ἀκαδημίας Ἀθηνῶν κ. Κ. Πουλάκος παρετήρησεν εἰς τὴν πλάκα ὑπ' ἀριθ. Ε - 1232 τοῦ Ἀστεροσκοπείου τοῦ Πάλομαρ ἀντικείμενον τὸ ὁποῖον ἐκ πρώτης ὄψεως δὲν ἐφαίνετο νὰ εἶναι ἀστήρ. Τὴν αὐτὴν γνώμην ἐσχημάτισα καὶ ἐγὼ ἀπὸ τὴν ἐπισταμένην παρατήρησιν τοῦ ἀντικειμένου τούτου διὰ τοῦ στερεομικροσκοπίου Zeiss. Κατόπιν τούτου ἀπεφασίσθη ὅπως ἀπὸ κοινοῦ ἐρευνήσωμεν τὸ ἐν λόγῳ θέμα διὰ νὰ διαπιστώσωμεν τὴν φύσιν τοῦ ἀντικειμένου.

Πρὸς τοῦτο παρετηρήσαμεν κεχωρισμένως τὴν μορφολογίαν τοῦ ἀντικειμένου, τόσον εἰς τὴν ἐρυθράν, ὅσον καὶ εἰς τὴν κυανῆν περιοχὴν τοῦ φάσματος καὶ συνεκρίναμεν κατόπιν τὰ πορίσματα τῶν ἐρευνῶν μας, τὰ ὁποῖα εὑρέθησαν νὰ εἶναι σχεδὸν ταυτόσημα.

Οὕτως ὅσον ἀφορᾷ τὴν μορφολογίαν τὸ περὶ οὗ πρόκειται ἀντικείμενον ἐμφανίζεται εἰς τὸ μικροσκόπιον μὲ σχῆμα σαφῶς ὠοειδὲς περιβαλλόμενον ἀπὸ ἅλω μακρᾶς ἐκτάσεως ἥτις εἶναι περισσότερον ἔκδηλος εἰς τὰ δύο ἄκρα τοῦ μεγάλου ἄξονος τοῦ ἐλλειπτικοῦ σχήματος. Ἡ ἅλως φαίνεται νὰ εἶναι πλέον ἐκτεταμένη πρὸς τὸ Νοτιο-Δυτικὸν τμῆμα τοῦ ἀντικειμένου. Εἰς τὴν κυανῆν περιοχὴν τοῦ φάσματος τὸ ἀντικείμενον ἔχει σαφῶς σχῆμα ἐλλειπτικὸν μὲ μεγαλυτέραν ἐκκεντρότητα ἀπὸ ὅ,τι εἰς τὴν ἐρυθρὰν περιοχὴν τοῦ φάσματος. Ἡ ἅλως ἐξακολουθεῖ νὰ περιβάλλῃ τὸ ἀντικείμενον καθισταμένη πλέον ἔκδηλος καὶ πάλιν εἰς τὸ Νοτιο-Δυτικὸν ἄκρον τοῦ μεγάλου ἄξονος.

Μετὰ τὴν πρώτην ταύτην μορφολογικὴν ἔρευναν ἐξετελέσαμεν ὁμοίως κεχωρισμένως τὰς ἀναγκαίας μετρήσεις διὰ τὸν προσδιορισμὸν τῶν συντεταγμένων αὐτοῦ δηλαδὴ τῆς θέσεώς του ἐπὶ τῆς οὐρανίου σφαίρας, καθὼς καὶ τῶν διαστάσεων αὐτοῦ δηλαδή, τὰ μήκη τοῦ μεγάλου καὶ μικροῦ ἄξονος τοῦ ἐλλειπτικοῦ σχήμα-

τος. Τὰ ἐξαγόμενα τῶν μετρήσεων τούτων ὅσον ἀφορᾷ τὰς συντεταγμένας τοῦ ἀντικειμένου διαφέρουν ἐλάχιστα μεταξὺ τῶν δύο παρατηρητῶν ἤτοι 4 - 5 δεύτερα λεπτὰ κατ' ὀρθὴν ἀναφορὰν καὶ 2 - 3 πρῶτα λεπτὰ τόξου κατ' ἀπόκλισιν. Ὅσον ἀφορᾷ τὰς διαστάσεις αἱ μετρήσεις ὑπῆρξαν σχεδὸν ταυτόσημοι.

Τὰ πρῶτα πορίσματα τῶν ἐρευνῶν μας δεικνύουν ὅτι τὸ ἐν λόγῳ ἀντικείμενον εἶναι γαλαξίας ἐλλειπτικοῦ τύπου τῆς τάξεως E_6.

Μετὰ τὴν διαπίστωσιν ταύτην ἐρευνήσαμεν ἐπισταμένως τοὺς σχετικοὺς καταλόγους γαλαξιῶν (Nilson, 1973) πλανητοειδῶν νεφελωμάτων (Abel, 1966, Perek and Kohoutek, 1967) διαχύτων νεφελωμάτων τῶν ραδιοπηγῶν, ὡς καὶ τὰς μεμονωμένας ἀνακοινώσεις ἐρευνητῶν. Ἡ ἔρευνά μας ἀπέδειξεν ὅτι ὁ ὑφ' ἡμῶν εὑρεθεὶς γαλαξίας δὲν ἀναφέρεται εἰς οὐδεμίαν τῶν σχετικῶν τούτων πηγῶν.

Ἐπειδὴ ὡς γνωστὸν σπανίως παρατηροῦνται μεμονωμένοι γαλαξίαι ἐρευνήσαμεν ἀμφότεροι διὰ τὴν ὕπαρξιν καὶ ἄλλων γαλαξιῶν εἰς τὴν περιοχὴν τοῦ πρώτου. Ἡ ἔρευνα αὐτὴ μᾶς ὡδήγησεν εἰς τὴν ἀνεύρεσιν καὶ ἑτέρου ἀντικειμένου μὴ ἀστρικῆς φύσεως καὶ κατὰ πολὺ ἀμυδροτέρου τοῦ πρώτου. Τὸ δεύτερον τοῦτο ἀντικείμενον παρουσιάζει τὴν μορφολογίαν ἐλλειπτικοῦ νεφελώματος μὲ κεντρικὸν πυρῆνα περιβαλλόμενον ὑπὸ ἅλω, ἡ ὁποία εἶναι πλέον ἔκδηλος εἰς τὰ ἄκρα τοῦ μεγάλου ἄξονος. Ὁ προσανατολισμὸς τῶν δύο τούτων ἀντικειμένων εἶναι τοιοῦτος ὥστε οἱ μεγάλοι ἄξονες αὐτῶν νὰ σχηματίζουν γωνίας 72° ἕως 73° περίπου. Τὸ δεύτερον ἀντικείμενον εἶναι σαφῶς ἀμυδρότερον τοῦ πρώτου, πλὴν ὅμως καὶ εἰς αὐτὸ ἡ ἅλως εἶναι σαφῶς εὐδιάκριτος τόσον εἰς τὴν ἐρυθρὰν ὅσον καὶ εἰς τὴν κυανῆν περιοχὴν τοῦ φάσματος. Ἔχομεν τὴν γνώμην ὅτι καὶ τὸ δεύτερον τοῦτο ἀντικείμενον εἶναι γαλαξίας.

Παρόμοια ἔρευνα, ἡ ὁποία ἐγένετο καὶ διὰ τὸν δεύτερον τοῦτον γαλαξίαν ἀπέδειξεν ὅτι δὲν ἀναφέρεται εἰς τὰς σχετικὰς πηγάς.

Τὰ ἐξαγόμενα ταῦτα ἀποτελοῦν πρόδρομον ἀνακοίνωσιν. Ἐπιφυλασσόμεθα νὰ προβῶμεν εἰς περαιτέρω ἔρευναν διὰ τῆς λήψεως φωτογραφικοῦ ὑλικοῦ καὶ ἢ δυνατὸν φάσματος διὰ τοῦ τηλεσκοπίου τοῦ Ἀστεροσκοπείου τῆς Haute - Provence τῆς Γαλλίας προσεχῶς.