

OBSERVATIONS OF CLOSE PAIRS OF FAINT BLUE OBJECTS:  
TOWARDS MIRAGE OR REALITY\*

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ABSTRACT, INTRODUCTION and CONCLUSION. We present the results of a preliminary observational run of the FRV sample (Fringant et al, 1983) of close pairs of UVX objects at high galactic latitude. The extragalactic physical pairs are ~30% and most of them do appear as "interactivating" AGNs. The method seems equally adapted to find new gravitational mirages as well as really double QSOs.

RESULTS

15(12 UVX-UVX + 3 mixed) pairs have been investigated at this time. Observations and results are summarized in Table 1 where the following abbreviations are used. Only the initials are mentioned for the observers: Buser, Cayrel, Fringant, Lelievre, Mathez, Reboul, Stockton, Vanderriest. P or O in the last column means: proved Physical or Optical.

TABLE I

Object	$\theta$	B1(color)	B2(col)	TELESCOPE(Observer)	NATURE	REDSHIFT	C
PHL2758-C	3.7	18.2(II)	18.4(III)	CFH3.6(V)/ESO3.6(R)	HS + ? (HS=HaloStar)		
PHL6657-8	4.	18.1(II)	18.2(II)	ESO2.2(C,B,R)	HII + HII	0.079+0.079	P
PHL925-C	6.	17.3(I)	18.4(II)	ESO3.6(R)	HS + ?		
PB6378-C	8.	17. (II)	20. (I)	CFH3.6(V)/OHP1.9(V)	SY?+LG?	0.087+0.087	P
PB9261-C	2.	17.5(II)	19. (II)	" "	GAL+JET	0.066	P
US2065-6	4.	18.2(I)	18.8(I)	CFH3.6(L,M,V)	HS + ?		
PB3424-5	2.8	18. (I)	18.5(I)	HAWAII2.2(S)	WD+WD		P
PB4053-C	8.	16.5(I)	18. (K)	OHP1.9(V,R,F)	SY1+GAL	0.089+?	
PHL1696-7	2.2	16.7(II)	17.8(II)	CFH3.6(L)	SB GAL		P
PB5062-C	5.5	17.5(II)	19. (G)	ESO2.2(C,B,R)	QSO+HS	1.77	O
PHL241-2	7.	17. (I)	17.9(II)	ESO3.6(R)	WD + ?		
PB7348-C	5.	17.5(II)	18.5(A)	ES03.6(R)	QSO+ ?	1.33+ ?	
PB7496-7	6.	18. (II)	18. (II)	ESO3.6(R)	WD + ?		
PHL2236-C	6.	18.2(II)	18.4(II)	ESO3.6(R)	HS + ?		
PHL6171-C	2.7	16.2(III)	16.5(III)	ESO3.6(R)	HS + ?		

\* Discussion on p.553

## DISCUSSION

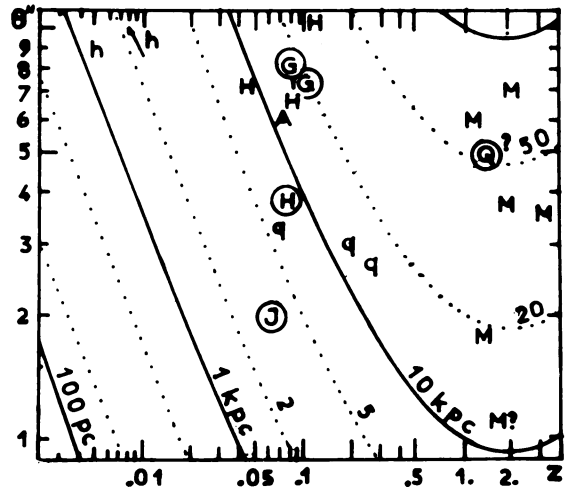
The 5 proved physical pairs and the absence of proved optical pairs among the 12 UVX-UVX associations confirms the predictions of the 2-points auto-correlation function of the Berger-Fringant catalogue (Fringant et al 1983). It seems possible to give a crude estimation of  $\sim 30\%$  of extragalactic physical pairs for such samples ( $\langle\theta\rangle=4.0''$ ,  $\langle B1\rangle=18.2$ ,  $\langle\Delta B\rangle=1.9$ ). Physical pairs of Halo Stars and White Dwarfs are respectively  $\sim 40\%$  and  $\sim 25\%$ .

The projected linear separations ( $H_0=50$ ,  $q_0=0.15$ ) are 8 kpc for the pair of HII regions PHL6657-8, 18 kpc for the pair of active galaxies PB 6378-C and 19 kpc for the pair of probably active galaxies PB4053-C. The case of PB7328-C is doubtful. The object could be a really double QSO or a QSO-BLac association (50 kpc) but we cannot dismiss an optical pair.

The fact that quite all the extragalactic pairs appear in strong gravitational interaction and the high proportion of AGNs is an argument for the hypothesis of "interactivation" i.e. mutual activation by gravitational interaction (direct or tidal fueling of the accretion disks of the central massive bodies). The activation hypothesis has been investigated by some authors (see e.g. Hutchings et al 1982, de Robertis 1985).

Due to its low  $\langle\Delta B\rangle$ , the FRV sample could reveal symmetrical cases. If double interactivating QSOs do exist, they must lie in the same observational range than mirages (fig. 1). In addition of testing the validity of the activation hypothesis at remote times, really double QSOs could have on  $q_0$  the same potentiality than mirages have on  $H_0$ .

Figure 1. Projected linear separations ( $H_0=50$ ,  $q_0=0.15$ )  
 H= sym. pairs of HII regions (Shaver and Chen, 1985, Halpern et al, 1984)  
 h= as H but very unsym.  
 q= QSO-compan. (Stockton, 1982)  
 G= FRV interactivating gal.  
 J= FRV Jet-galaxy  
 H= FRV pair of HII regions  
 Q= FRV interactivating QSOs??  
 M= known mirages  
 A= QSO-Gal. (Gilmore, 1984)



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