

FURTHER INVESTIGATIONS ON POSSIBLE CORRELATIONS BETWEEN QSOs AND THE LICK CATALOGUE OF GALAXIES.

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We analyze the different contributing factors in a previous study by Seldner and Peebles (1979) who found statistically significant evidence for a correlation between a list of 382 QSOs at  $|b| > 40^\circ$ ,  $\delta > -23^\circ$  and the Lick counts of galaxies ( $m < 19.0$ ), namely, that there are on the average  $1.45 \pm 0.39$  more galaxies within  $15'$  of a QSO than expected if QSOs were placed at random across the sky. Taking into account these different factors and using a larger sample of QSOs whose detection is not expected to bias our statistical results, we conclude that: i) There is no longer statistically significant evidence for an excess of Lick galaxies close to QSOs from our list considered as a whole. After removing the different possible biases, if there was any excess left in that previous study, it was rather due to radio QSOs and not to optical QSOs. This effect is marginal if we adopt a mean density of galaxies in a ring between  $2^\circ$  and  $5^\circ$ , and null if the mean density is taken between  $1^\circ$  and  $2^\circ$  from QSOs; ii) The whole correlation function  $w(\theta)$  shows in general a hump between  $1.5$  and  $2^\circ$ . This is either an off-set value or a maximum value preceding a slow decrease in  $w(\theta)$  between  $1.5 - 2^\circ$  and  $5^\circ$ . This feature seems to pertain more to high redshift QSOs ( $z > 0.4$ ) and to radio QSOs than to optical QSOs. It seems slightly more pronounced at the polar galactic caps and at very low galactic latitudes; iii) Numerical simulations seem to indicate that the error bars determined by assuming that cell numbers are independent are slightly underestimated. They reproduce fairly well some features within  $1^\circ$  from the QSOs and suggest that the hump at  $1.5 - 2^\circ$  would not be as unlikely as indicated by the error bars.

Reference

Seldner, M., and Peebles, P.J.E. 1979, *Ap. J.*, 227, 30.