

CN-STRONG AND CN-WEAK DISK GIANTS

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ABSTRACT. The analysis of the observed abundance of some elements in atmospheres of CN-weak and CN-strong giants is presented.

Key words: stars: abundances - stars: atmospheres - stars: evolution

1. Introduction

CN-strong stars are stars with CN bands abnormally strong for their temperature types and luminosity classes but the stars having the CN bands definitely weaker than the average for stars of the same temperature and luminosity - CN-weak (Keenan, 1987). The question is the blue CN band extended to about λ 4215 AA). Why the giants have positive and negative CN-index? What are causes of these .

2. Observations and atmosphere parameters

For this works we reviewed our investigation of CN-strong giants (Mishenina et al.,1995; Mishenina & Kutsenko, 1996; Mishenina & Tsymbal, 1997) and Luck & Challener (1995) for some CN-strong giants and Luck (1991) for CN-weak. Our observation data were obtained with the coudé echelle spectrometer the 1-m telescope of Special Astrophysical Observatory of the Russian Academy of Sciences. Spectroscopic data for stars from Luck (1991), Luck & Challener (1995) were obtained using the Kitt Peak National Observatory coude feed telescope with the coude spectograph and CCD detector system. For analysis we taken the stars with determined CN-index. For three common stars our results of determination of atmosphere parameters and metallicity agree good with the results of Luck & Challener (1995). See Table 1.

Table 1: Comparison of atmosphere parameters of studied stars

HD	T_{eff}	$\log g$	[Fe/H]	Ref
181984	4480	2.0	0.10	our investigation
-	4450	2.3	0.13	Luck & Challener (1995)
185598	4800	2.70	0.07	our investigation
-	4825	2.25	0.04	Luck & Challener (1995)
222404	4810	3.0	-0.02	our investigation
-	4750	3.15	-0.01	Luck & Challener (1995)

CN-index correlations with diverse parameters are given in Figure 1 (a,b,c,d,e,f).

3. Discussion

As can see from Figure 1, the correlations between CN-index and $\log g$, O and Na abundances wasn't, but Fe, O, N abundances observed. Obtained results show that CN-strong giants have C and N overabundances it may be connect with presence of C and N abundance dispersion in pre-stellar matter, and N overabundance may be consequence of deep mixing in giants with positive CN-index.

References

- Luck R.E.: 1991, *Ap.J.Suppl.*, **75**, 579.
 Luck R.E., Challener S.L.: 1995, *A.J.*, **110**, 2968.
 Mishenina T.V. et al.: 1995, *As.Ap.Suppl.*, **113**, 333.
 Mishenina T.V., Kutsenko S.V.: 1996, *Kinematika i Fizika Nebesnyh tel*, **12**, N 5, 17.
 Mishenina T.V., Tsymbal V.V.: 1997, *Pis'ma Astron. Zh.*, **23**, N 8

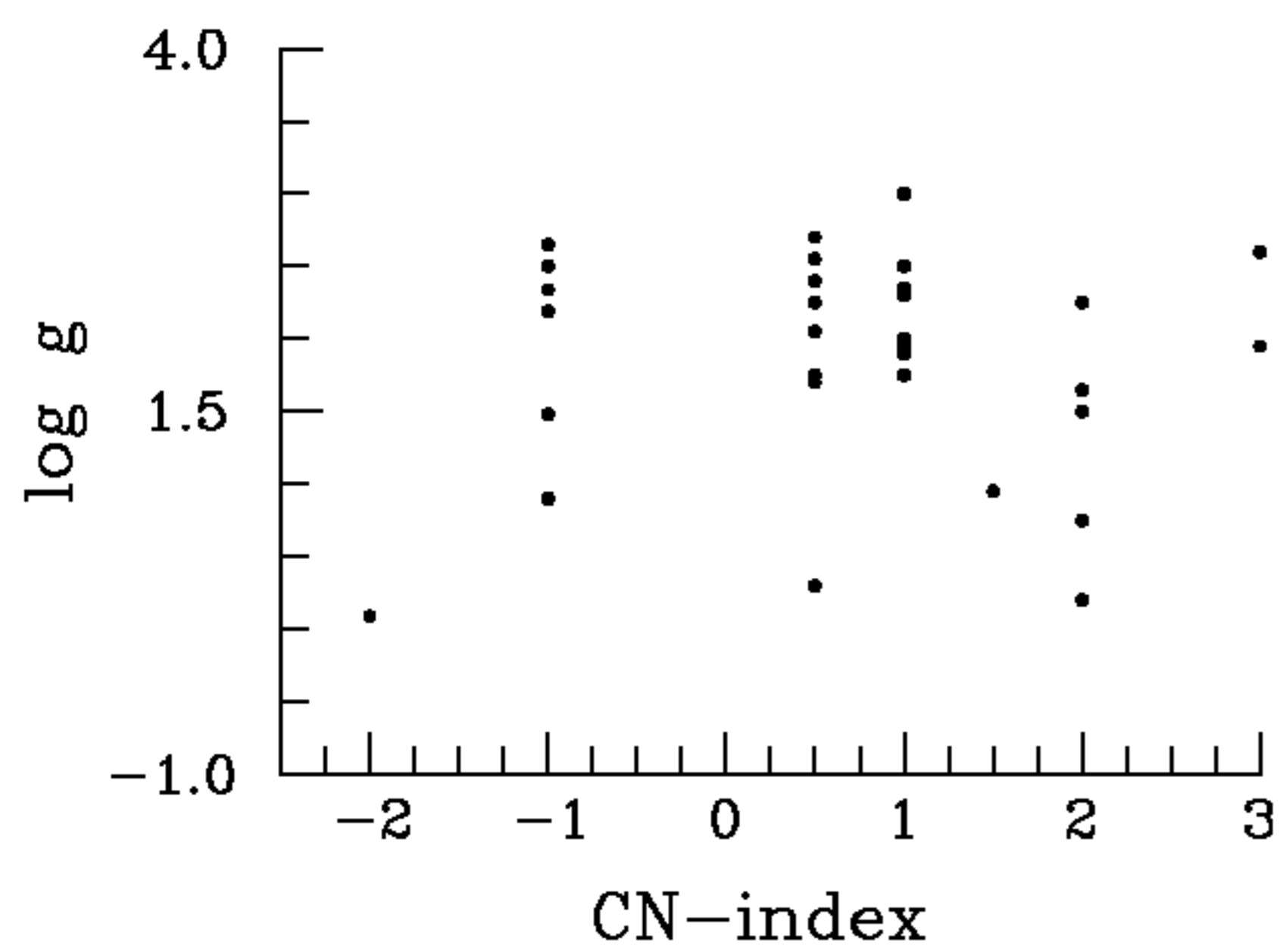


Figure 1a. The relation between $\log g$ and CN-index.

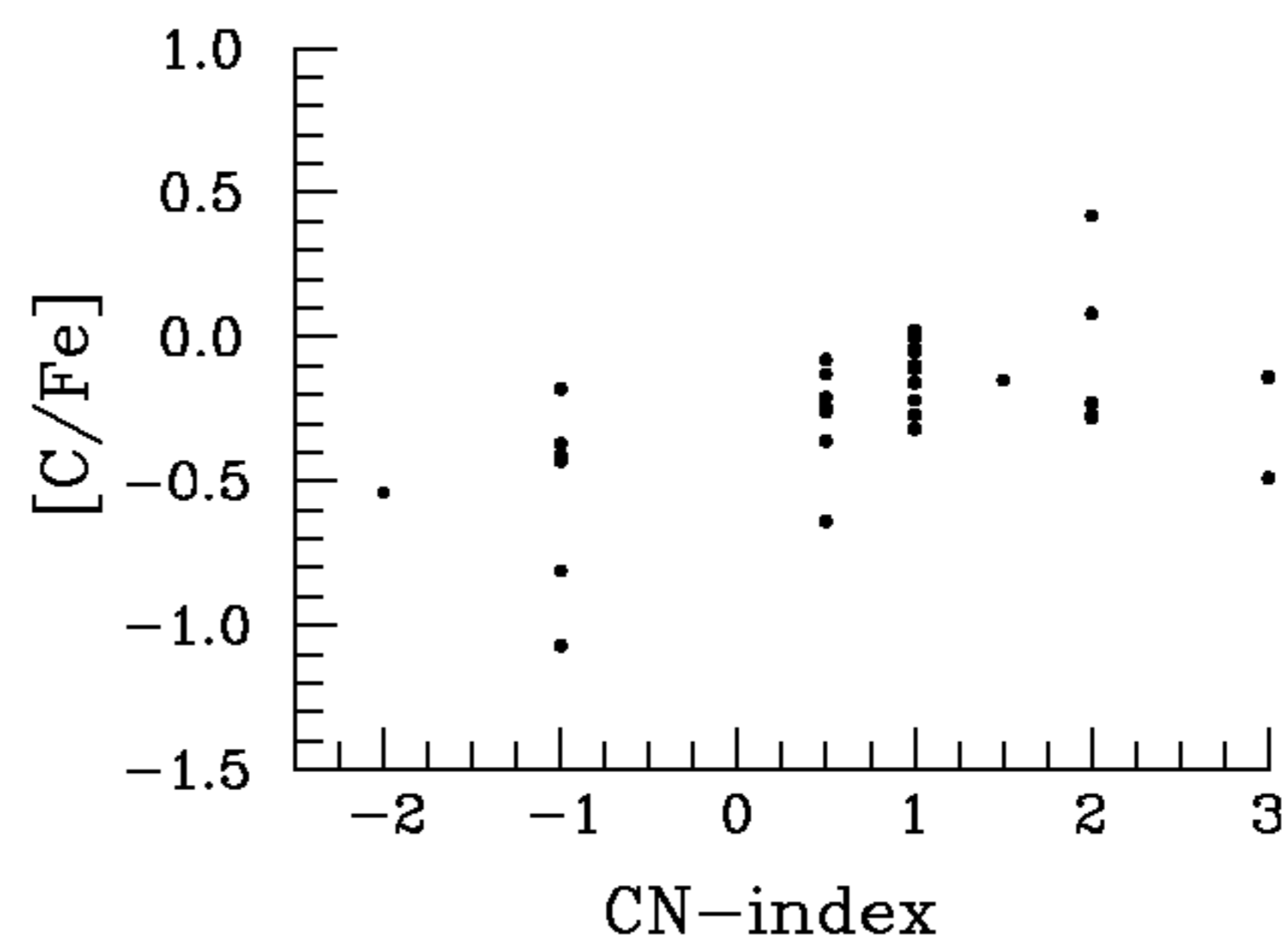


Figure 1d. The relation between $[C/Fe]$ and CN-index.

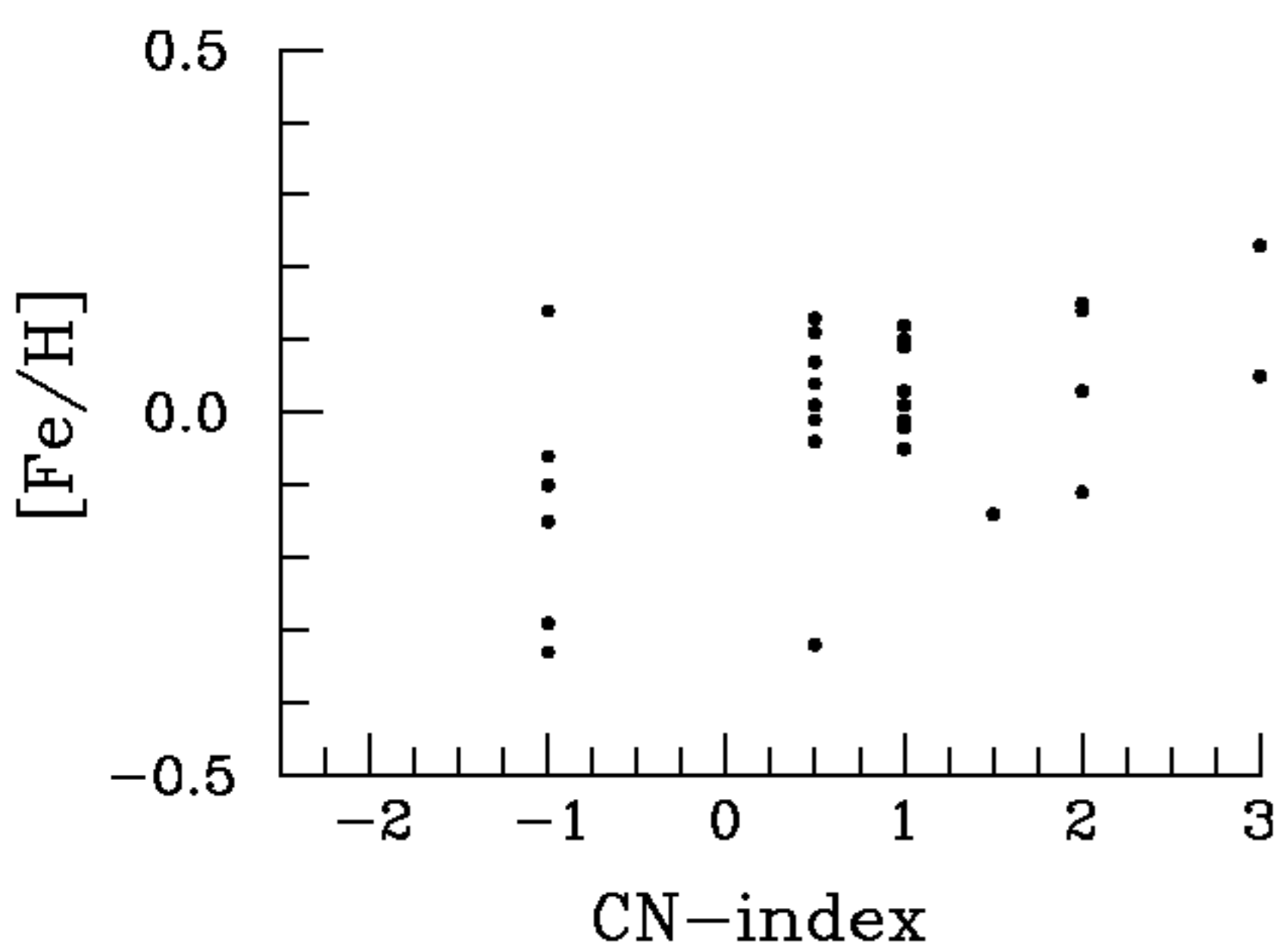


Figure 1b. The relation between $[Fe/H]$ and CN-index.

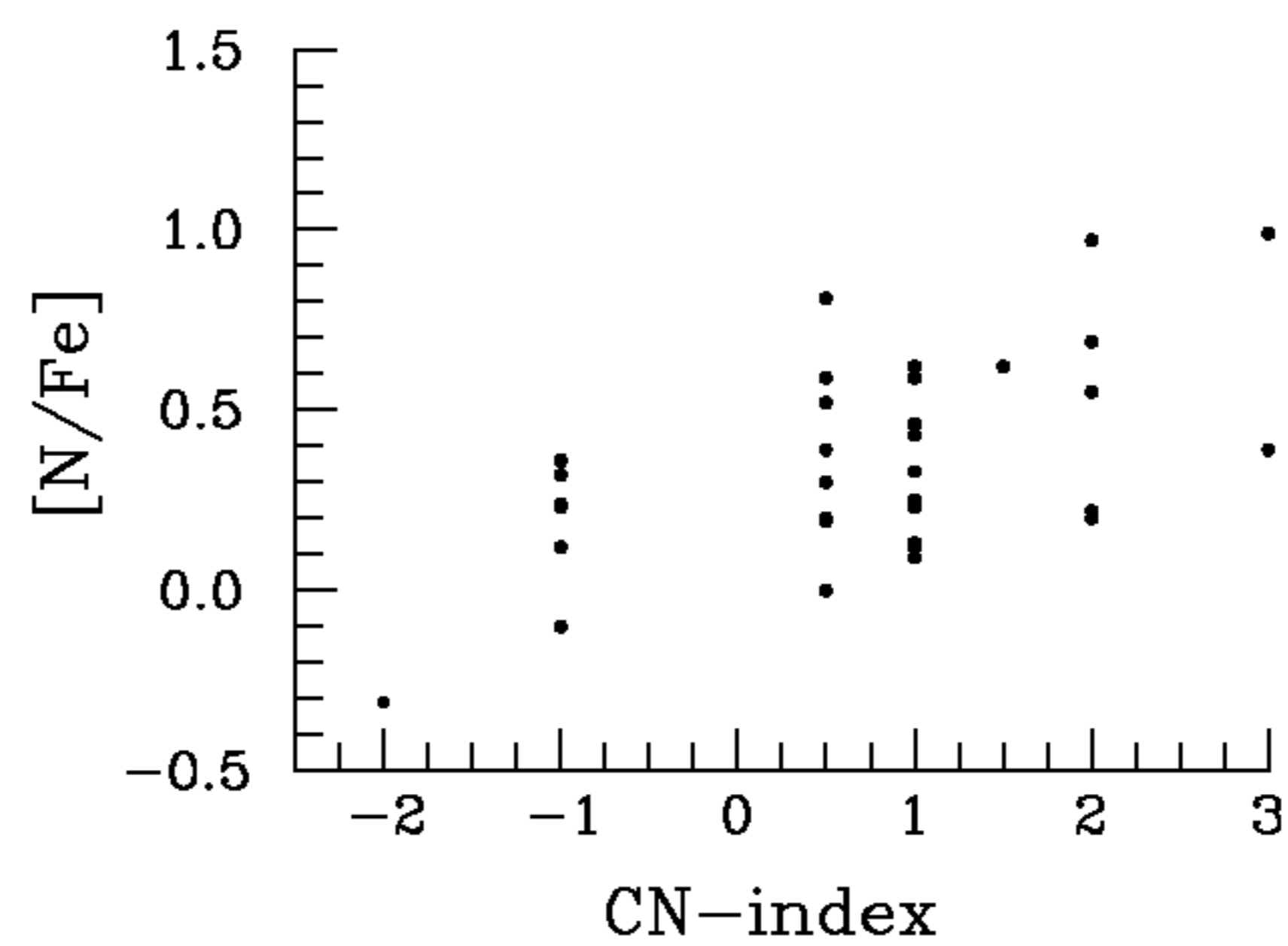


Figure 1e. The relation between $[N/H]$ and CN-index.

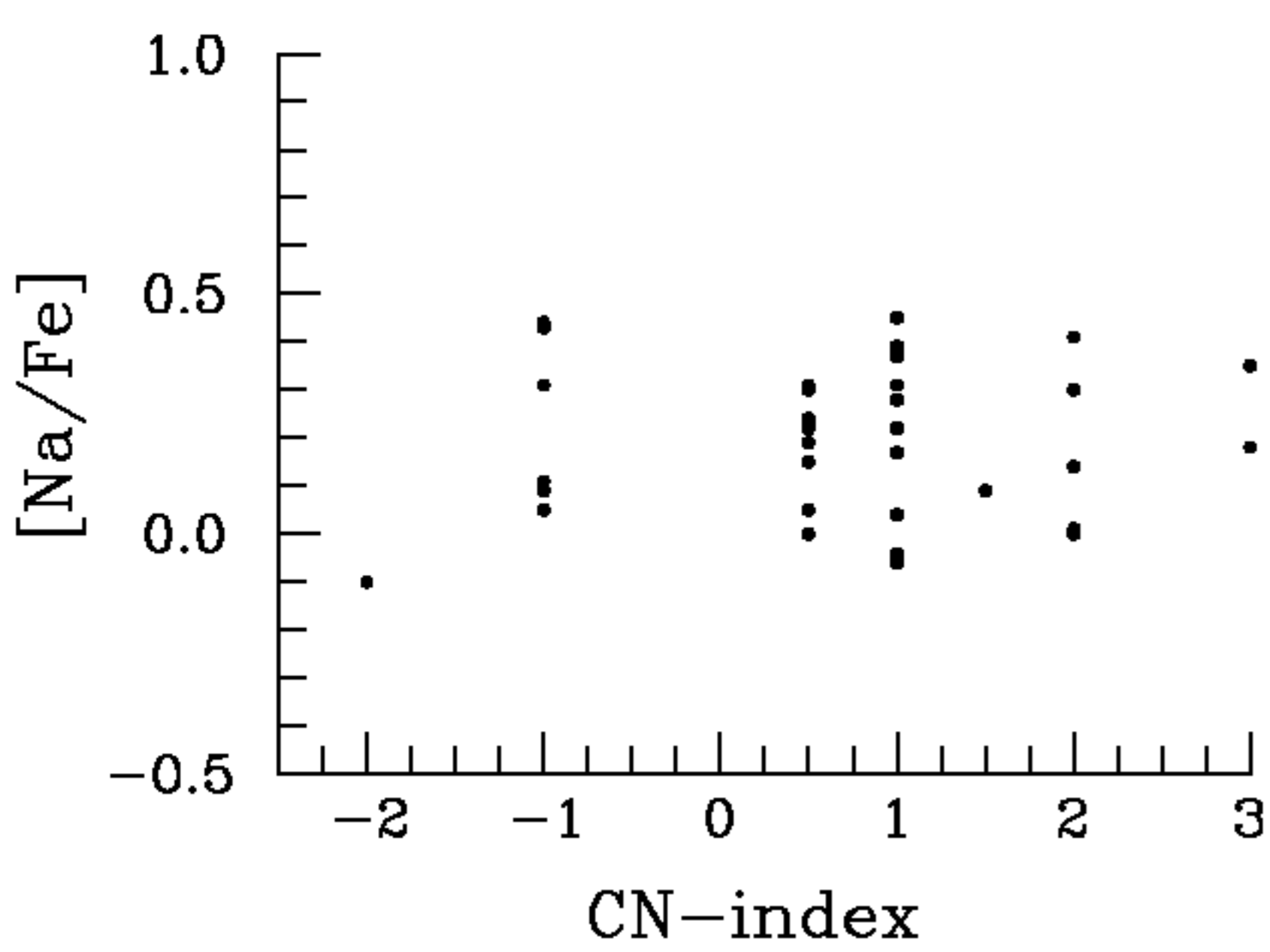


Figure 1c. The relation between $[Na/Fe]$ and CN-index.

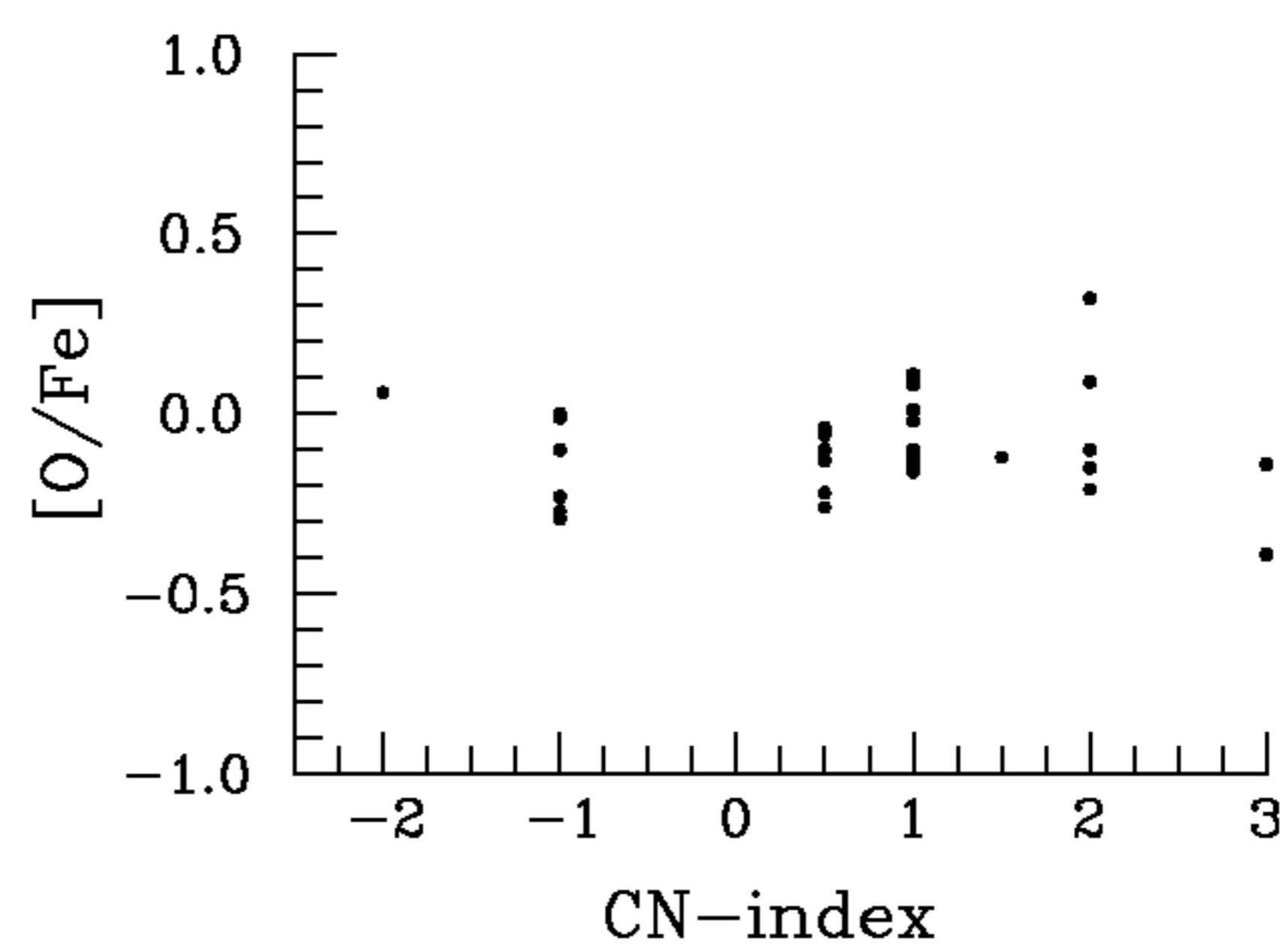


Figure 1f. The relation between $[O/Fe]$ and CN-index.