HIDESによる金属欠乏星観測
〜硫黄組成の予備的解析〜

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1. 目 的

SI（1） 9212−9237A 3重線の検出と組成解析を行い、 SI (6) 8693−94線から求めた組成との一致性を調べる。

→ S の振る舞いを[Fe/H]〜-4までの領域で明らかにする。

2. 観 測

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Item                        Description
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Observing dates:        2002 Aug. 17, 18
Instrument:             HIDES
Wavelength observed:    8660 - 9710 A
Resolution:             40000

S/N ratios @ 8850 A:
        ================================================
          HD 6833     140283      189322      199191
        ------------------------------------------------
            100        120         400         100
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3. 解 析

（1）データ整約：

　通常のエシェルデータの整約を行ってから、ＳＩ
（1）領域は大気水蒸気吸収線が非常にたくさん
あるので、この除去補正を行う。　高速自転星ス
ペクトルを用いて　IRAF　の"telluric"で行った。

（2）組成解析：

Kurucz model ＋ WIDTH9 で解析した。

4. 予備的結果

（1）SI(1)の検出 ⇒ 対象の4星では、水蒸気線とブレンドしている場合でも、水蒸気線除去により、ほぼ存在が検出された。

（2）HD6833 においてSI(1)とSI(6)の組成に一致性が見られる。 他の星については0.3 dex以上の違いが見られるが、この原因は、SI(1)の領域の水蒸気除去補正がうまくいっていないことが考えられる。

. Equivalent widths and abundances of S I(1) and S I(6) lines

Star (HD)	S I (6)				S I (1)					
	8693.9 EW(mA)	logS	86094.6 EW(mA)	logS	9212.91 EW(mA)	logS	9228.11 EW(mA)	logS	9237.49 EW(mA)	logS
6833	3.0:	6.76:	5.5	6.48	77.5	6.71	56.8	6.50	34.9:	6.22:
140283	<3.7	<6.55	<3.0	<5.86	--- (blend)		(6.6 ?	4.80?)	15.0:	5.38:
189322	--- (blend)		12.7	7.01	97.7:	6.85:	74.4:	6.67:	47.1:	6.41:
199191	<11.6	<7.30	12.1	6.74	122.0*	7.12*	133.1*	7.43*	96.0:	7.16:

Remark:
(1) Values with ':' and '*' are 'uncertain' and 'very uncertain', respectively.
(2) In HD 140283, the result of 9228.11 line is not considered, and 9212 line is not measured on the water vapour corrected spectrum due to its imcomplete correction of water vapour.
(3) In HD 189322, 8693.9 line is blended with CN lines. CN lines is very strong.
(4) Microturbulence of 1.5 km/s is assumed for all stars.

2002/9/24, MTH

Preliminary Results of S Abundaces

Star(HD)	Teff	log g	[Fe/H]	log S(6)	log S(1)	dS(6-1)	Av.S	[S/H]	[S/Fe]
6833	4400	1.50	-0.91	6.57	6.52	+0.05	6.55	-0.66	+0.25
140283	5690	3.69	-2.41	<5.86	5.38:	<+0.48	5.38:	-1.83:	+0.58:
189322	4465	2.00	-1.57	7.01	6.64:	+0.37	6.83	-0.38	+1.19
199191	4800	2.25	-0.70	6.74	7.22:	-0.48	6.98	-0.23	+0.47

Remark: log S(sun)=7.21
         microturbulence = 1.5 km/s is assumed for all stars.

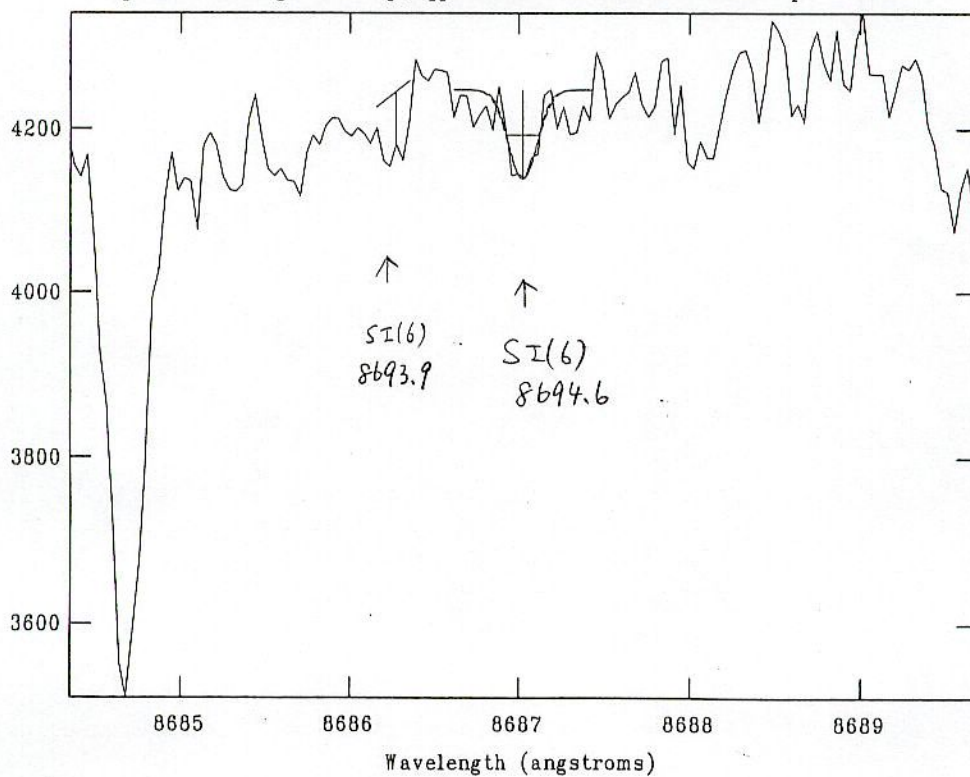NOAO/IRAF V2.11.2EXPORT hidai@apus Tue 20:59:01 24-Sep-2002
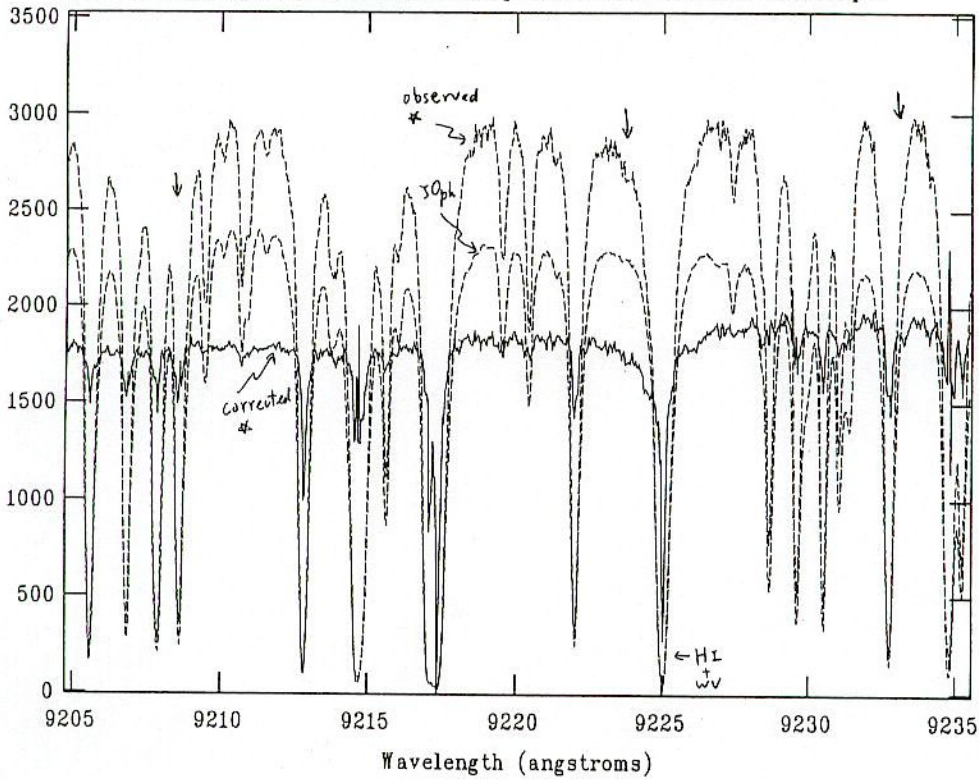[test-HD6833-17_W_4-water.fits]: nornalized Flat5000 6300. ap:4 beam:

HD6833

observed *

SI   SI   SI

30ph

Wavelength (angstroms)
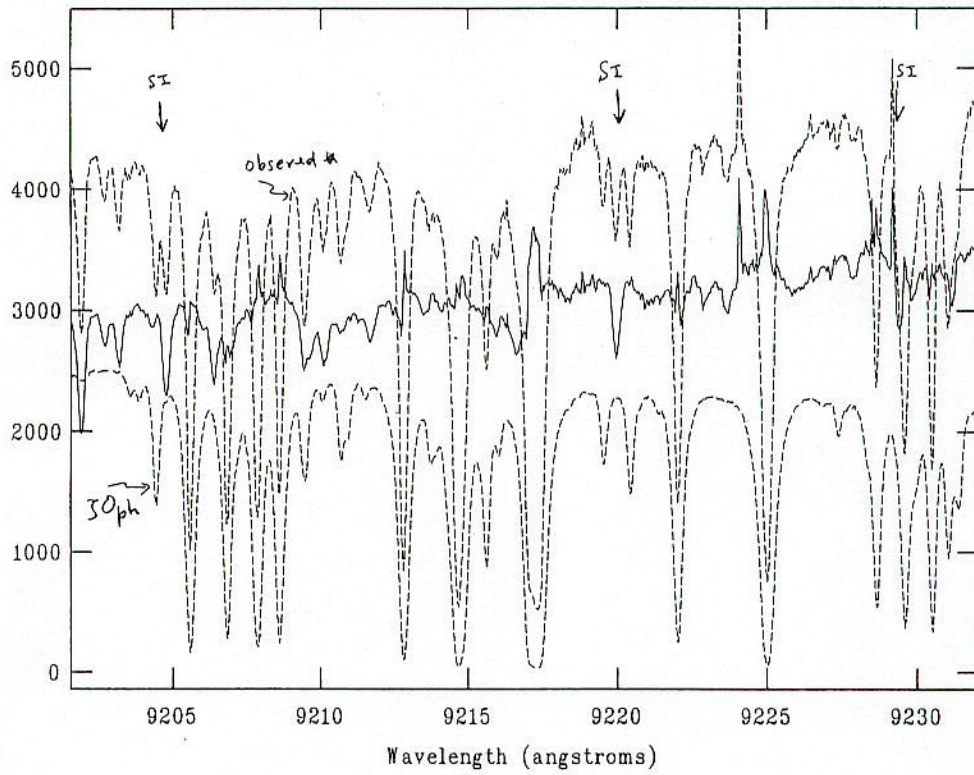
NOAO/IRAF V2.11.2EXPORT hidai@apus Mon 12:18:42 23-Sep-2002
[HD6833_02aug17_A.fits[*,7]]: nornalized Flat5000 6300. ap:7 beam:6

SI(6)
8693.9

SI(6)
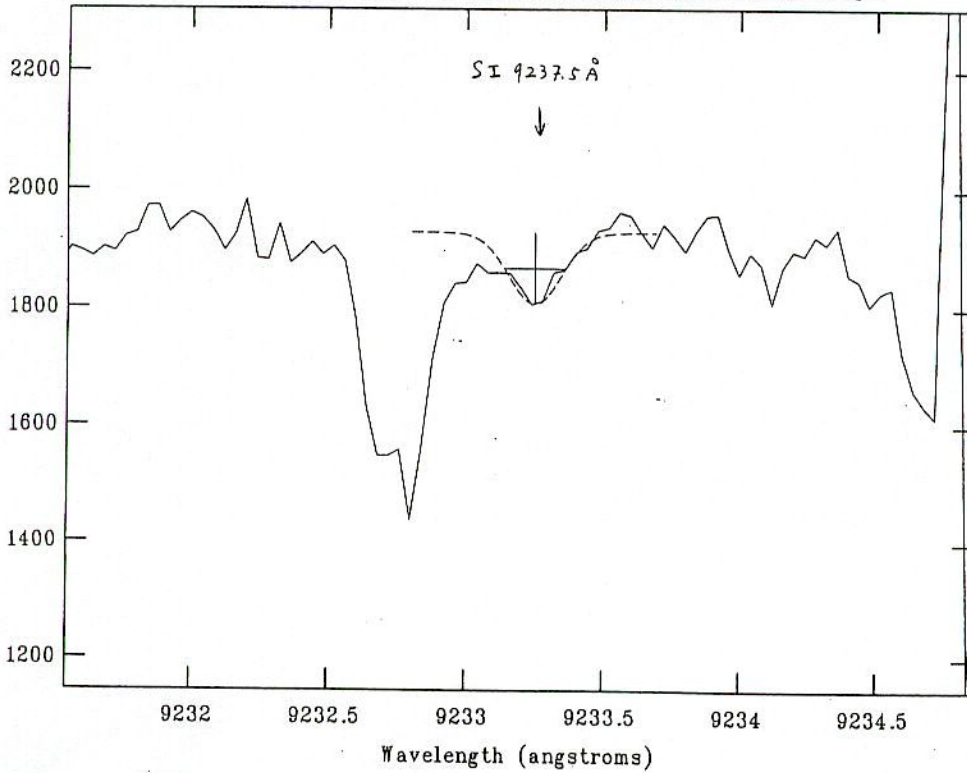8694.6

Wavelength (angstroms)

NOAO/IRAF V2.11.2EXPORT hidai@apus Tue 20:43:36 24-Sep-2002
[test-HD140283_02aug17_A_4_water.fits]: nornalized Flat5000 3600. ap:4

observed

sOph

corrected

←H1
+
wv

Wavelength (angstroms)

HD140283

NOAO/IRAF V2.11.2EXPORT hidai@apus Tue 15:21:31 24-Sep-2002
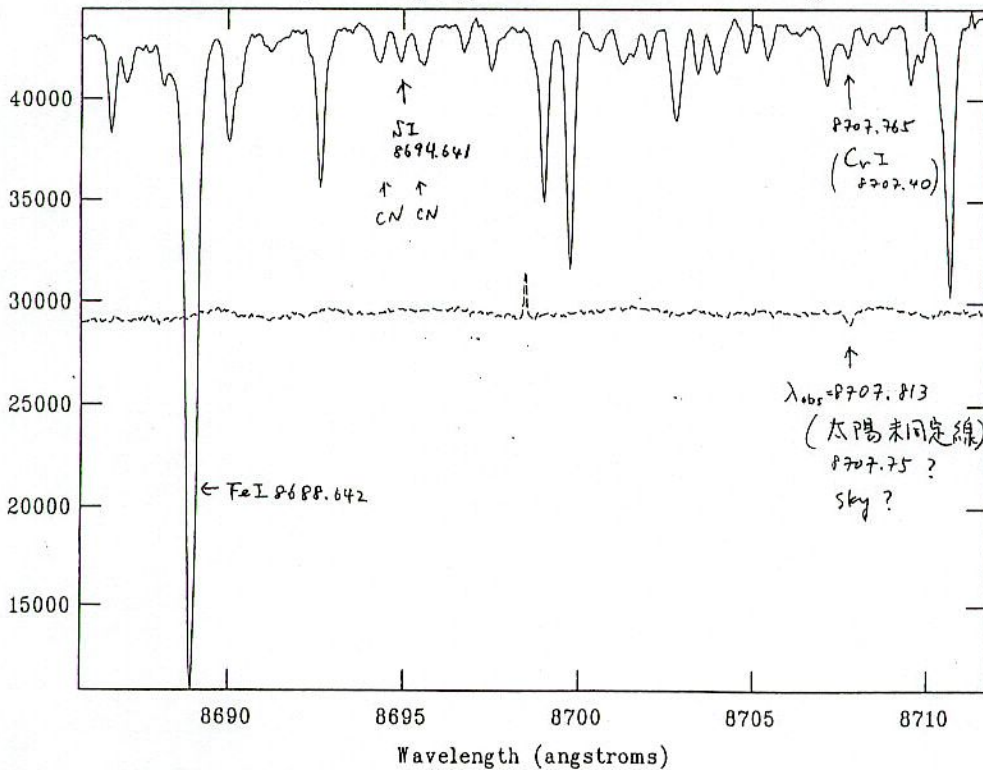[test-HD140283_02aug17_A_4_water.fits]: nornalized Flat5000 3600. ap:4

SI 9237.5 Å

Wavelength (angstroms)

HD189322

Wavelength (angstroms)

HD189322

$S I$
8694.641

8707.765

$(Cr I$
$8707.40)$

CN CN

$30 ph$

$\lambda_{obs} = 8707.813$

(太陽未同定線)
8707.75 ?
sky ?

← FeI 8688.642

Wavelength (angstroms)
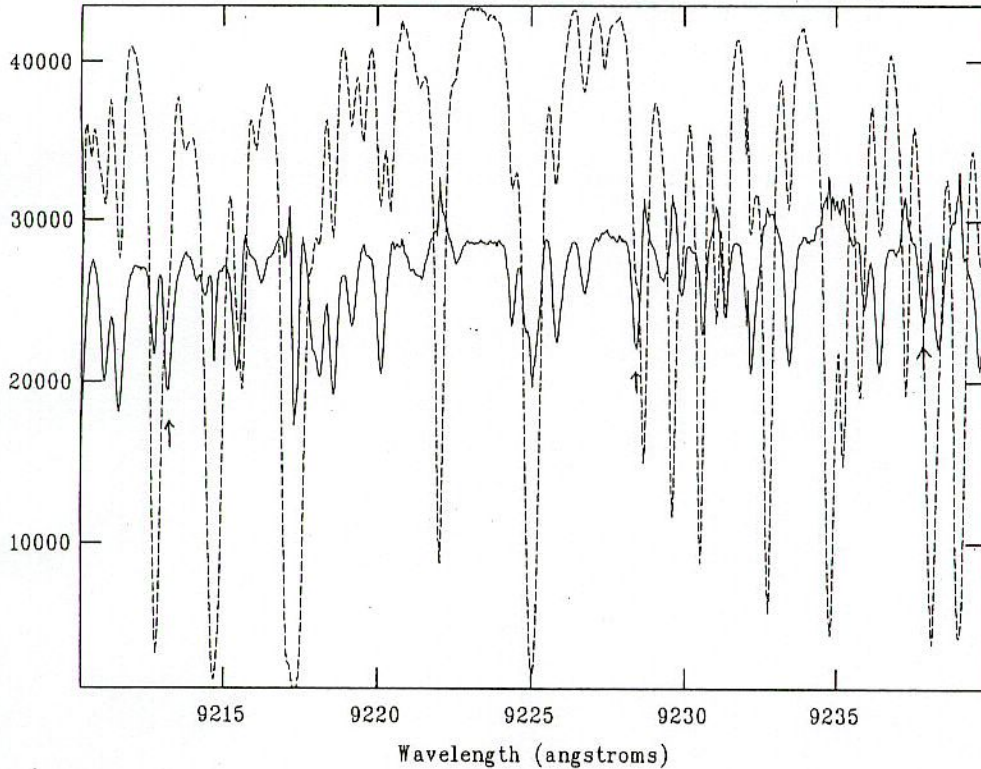
NOAO/IRAF V2.11.2EXPORT hidai@apus Tue 21:11:14 24-Sep-2002
[test-HD199191_02aug18_A_4_water.fits]: Bias subtracted 3600. ap:4 bea

γ Cas

obs. ⇓

Corr. ⇓

HD 199191

S I

S I

S I

γ Cas

Wavelength (angstroms)
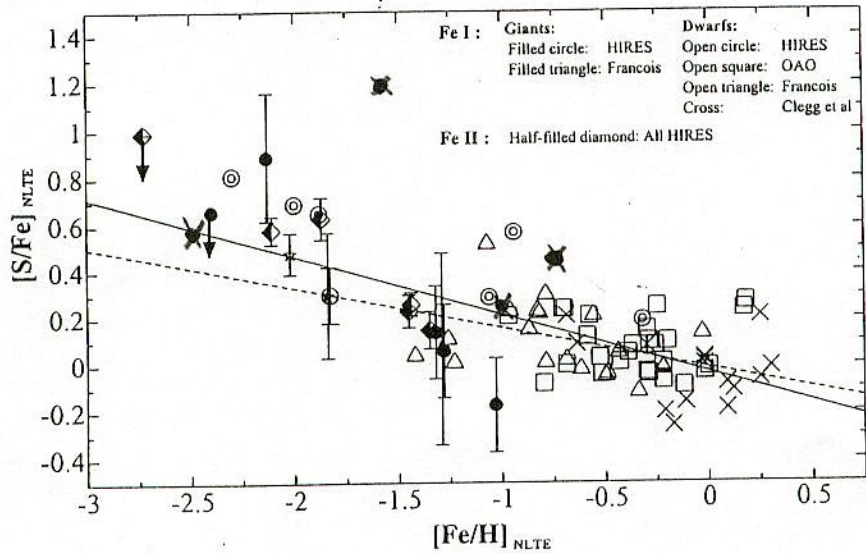
NOAO/IRAF hidai@apus Tue Sep 24 21:11:57

〈 S の 振舞い 〉

✗ this study
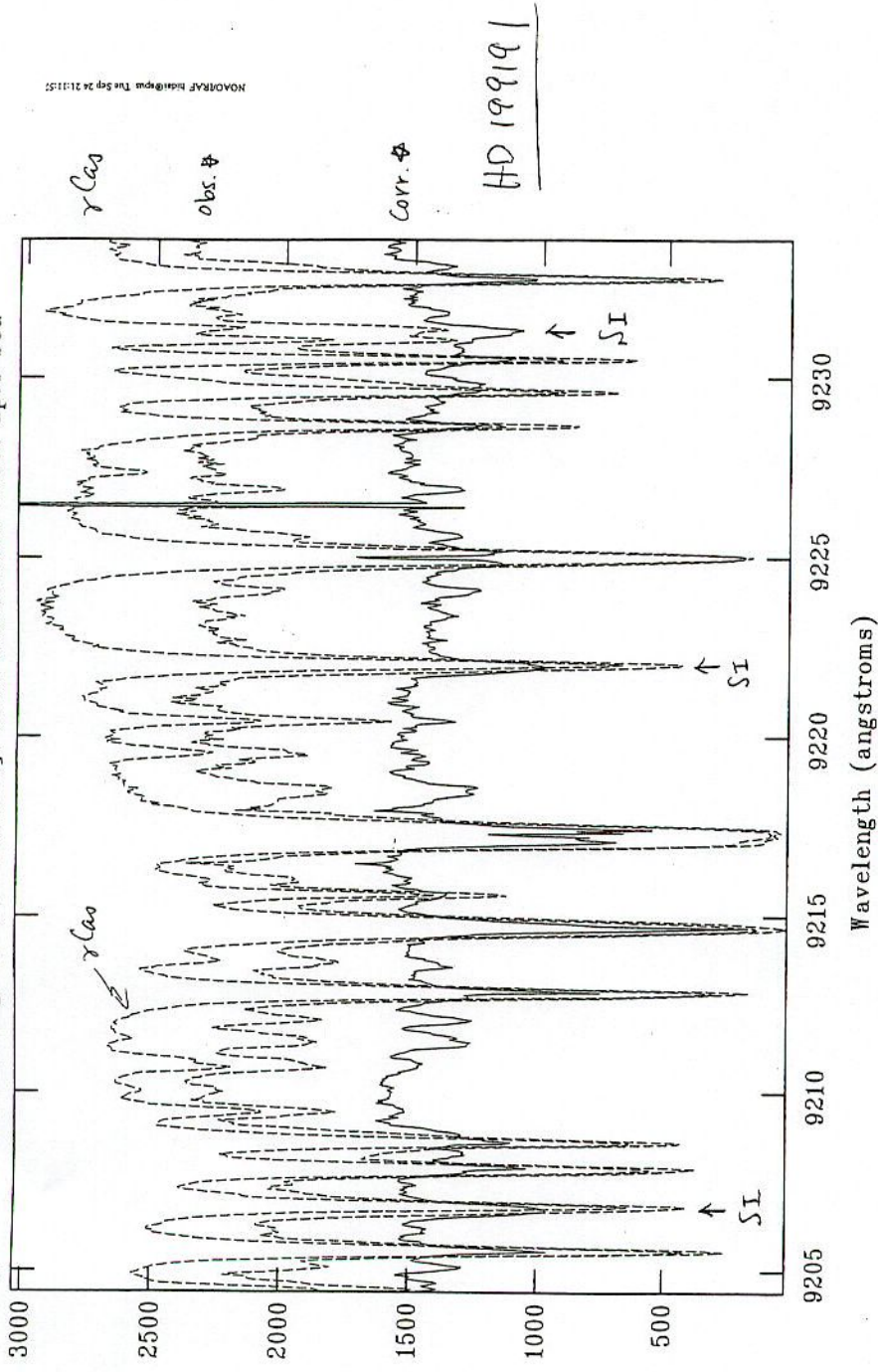
FIG. 3.—Behavior of sulfur with respect to iron in the NLTE results. The results of [S/Fe I] and [S/Fe II] calculated for HD 165195 using the model atmosphere adopted in Paper I are plotted as in Fig. 2. The least-square linear fit with a slope of −0.17 obtained for [S/Fe I] results of all our samples of dwarfs and giants is illustrated by dashed line, while the same fit with a slope of −0.25 is shown by solid line, which is derived from [S/Fe I] data of all our samples together with those of Israelian & Rebolo (2001) plotted with double circles.
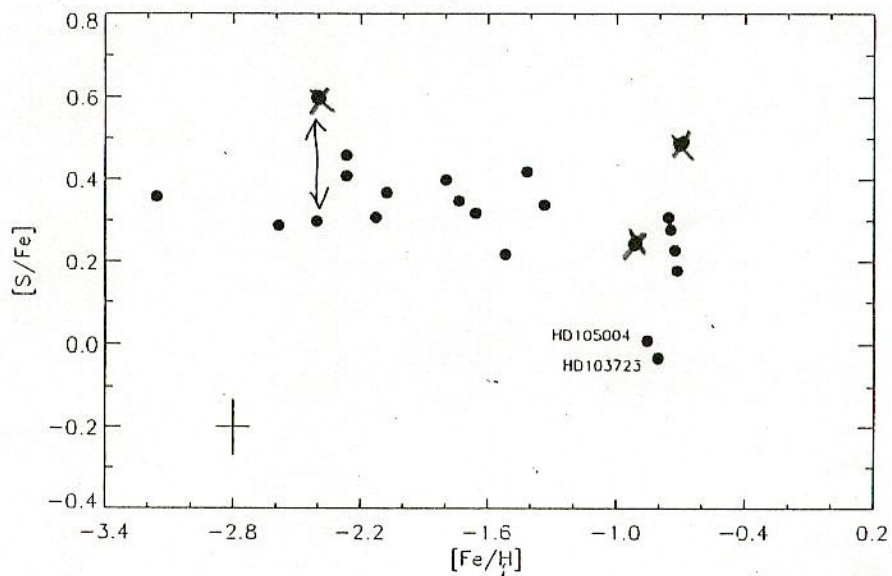
Sulphur and iron abundances in halo stars 9

Figure 4.   [S/Fe] vs. [Fe/H]. Filled circles are halo stars from the present work and open circles are disk stars from Chen et al. (2002). The typical error bars on the abundance ratios are shown, and the two α-deficient halo stars, HD 103723 and HD 105004 (Nissen & Schuster 1997), are indicated.