

# NOAA AR 10486

\* Evaluation of the energy-helicity formula in the linear force-free approximation

\* Observations obtained by BBSO/VMG on 10/28/03

Time (UT)	lff alpha value (Mm <sup>-1</sup> )	Potential magnetic energy Epot (x 10 <sup>32</sup> erg)	Free magnetic energy Efree (x 10 <sup>32</sup> erg)	(Efree/Etotal)	Total magnetic helicity (x 10 <sup>42</sup> Mx <sup>2</sup> )
16:38	0.0094 +- 0.004	26.78	7.82	0.23	207.5 +- 106
16:45	0.006 0 +- 0.002	27.62	3.13	0.10	130.9 +-49
16:55	0.0098 +- 0.005	24.85	7.48	0.23	190.3 +- 94
17:05	0.0117 +- 0.005	24.77	10.66	0.30	228.7 +- 107
17:12	0.0105 +- 0.013	26.14	1.80	0.06	42.8 +_ 53
17:44	0.0121 +- 0.008	29.02	15.45	0.34	320.4 +_ 224
17:49	0.0093 +- 0.005	29.70	8.95	0.23	241.7 +- 145
17:54	0.0080 +- 0.007	31.02	0.19	0.006	6.09 +_ 57
<b>Averages:</b>	<b>0.0096 +- 0.006</b>	<b>27.49</b>	<b>6.93</b>	<b>0.19</b>	<b>171 +- 104</b>

**Conclusions:** - **Right-handed overall magnetic structure as expected for the southern hemisphere**

- **Very large total magnetic helicity**

- **Large value of the (Efree/Etotal) ratio**

- **A flare-prolific AR**