

## Observational Proof of the ZZ Ceti Red Edge

A. Kanaan<sup>1</sup>, D. E. Winget<sup>2</sup>, S. O. Kepler<sup>3</sup>, M. H. Montgomery<sup>4</sup>

With a time-series CCD photometry survey, we have demonstrated clearly that the observed red edge for the ZZ Ceti stars instability strip at 11,000 K is not an observational selection effect. Previous surveys for variability among hydrogen atmosphere white dwarfs at around 11,000 K have been carried out using high speed photometry which suffers from variable extinction effects that start becoming important at periods of 15 minutes. In our survey we constantly monitor the sky brightness as well as one or more comparison stars. This is done through the same color filter, therefore minimizing adverse effects of differential extinction. The fact that the theoretical red edge should be around 8,000 K remains, but effects not included in the theory, especially convection-pulsation interaction, could explain it.

Table 1. Photometric limits on variability for cool DAs

WD	Alias	Temperature	Length (h)	Limit (mmag)
0032-175	G226-135	9980	4.8	< 2
0033+016	G001-007	11184	5.5	< 3
0101+048	G001-045	8750	6.7	< 2
0135-052	L870-002	8700	4.5	< 3
0816+387	G111-071	7710	6.6	< 3
0913+442	G116-016	8750	8.9	< 2
0955+247	G049-033	8600	9.2	< 2
1147+255	G121-022	10317	8.0	< 3
1244+149	G061-017	11068	4.8	< 5
1507-105	GD176	10640	4.2	< 3
1537+651	GD348	9910	5.0	< 2
1539-035	GD189	10457	7.1	< 2
1655+215	G169-34	9578	4.5	< 5
1840-111	G155-34	10389	5.0	< 3
1857+119	G141-54	10182	3.5	< 5
2136+229	G126-018	10652	7.5	< 2
2246+223	G067-023	11131	6.1	< 2

Table 1 presents the results of our survey. Limit is the upper limit for variability for periods shorter than two hours. Length is the duration of our observations.

<sup>1</sup>Departamento de Física, Universidade Federal de Santa Catarina, Brazil

<sup>2</sup>Department of Astronomy, University of Texas at Austin, U.S.A.

<sup>3</sup>Departamento de Astronomia, Universidade Federal do Rio Grande do Sul, Brazil

<sup>4</sup>Institut für Astronomie, Universität Wien, Austria