

TABLE A1. Phase Velocities for ${}_3R_4$

Period (s)	Phase Velocity (km/s)					Mean	1066A
	Event 1	Event 2	Event 3	Event 4			
94.8	8.00	8.06	7.96	8.10		8.03 ± 0.06	8.04
99.1	8.20	-	8.09	8.20		8.16 ± 0.06	8.20
103.9	8.28	8.24	8.24	8.30		8.27 ± 0.03	8.29
107.4	8.38	8.32	8.32	8.40		8.36 ± 0.04	8.38
113.8	8.52	8.48	8.47	8.60		8.52 ± 0.06	8.50
119.6	8.64	8.64	8.60	8.72		8.65 ± 0.05	8.69
128.0	8.78	8.90	8.84	8.88		8.85 ± 0.05	8.90
133.6	-	-	9.03	-		9.03 ± 0.02	9.00

TABLE A2. Phase Velocities for ${}_4R_4$

Period (s)	Phase Velocity (km/s)					Mean	1066A
	Event 1	Event 2	Event 3	Event 4			
93.8	8.76	8.83	8.77	8.80		8.79 ± 0.03	8.80
99.1	8.94	9.02	8.94	9.00		8.98 ± 0.04	9.00
106.7	9.22	9.28	9.22	9.22		9.23 ± 0.03	9.26
118.8	9.84	9.74	9.72	9.76		9.77 ± 0.05	9.78
128.5	9.94	10.20	10.10	10.14		10.10 ± 0.11	10.22
134.1	10.12	10.48	-	10.32		10.31 ± 0.18	10.48
147.0	-	11.02	-	11.20		11.11 ± 0.13	11.11

TABLE A3. Phase Velocities for ${}_5R_4$

Period (s)	Phase Velocity (km/s)					1066A
	Event 1	Event 2	Event 3	Event 4	Mean	
85.8	9.38	9.28	9.43	9.38	9.37 ± 0.06	9.31
90.1	9.68	-	9.72	9.62	9.67 ± 0.05	9.55
95.8	9.96	-	-	9.90	9.93 ± 0.04	9.84
114.1	-	-	-	10.96	10.96 ± 0.02	10.80
123.6	11.40	-	-	11.28	11.34 ± 0.08	11.36

TABLE A4. Periods of modes extracted by stacking

Angular Order l	Period of mode (s)					
	${}_3S_l$		${}_4S_l$		${}_5S_l$	
	Observed	1066A	Observed	1066A	Observed	1066A
26			141.00	140.22		
29					122.09	121.14
34	129.01	129.68				
35	127.20	126.98	117.03	116.58	108.50	107.92
36	124.69	124.42	114.41	114.47	106.39	105.98
37			112.84	112.44		
38			111.15	110.47		
39	117.03	117.34	108.50	108.57	100.89	100.58
40	115.22	115.18	106.85	106.73		
41	113.15	113.11	105.16	104.94		
42	111.15	111.12				
43	109.37	109.21	102.27	101.52		
44	107.37	107.31	99.78	99.88		
45	105.70	105.60				
46	103.96	103.89	96.83	96.74		
47	102.40	102.25	95.59	95.24		
48	101.26	100.66				
49	98.75	99.12	92.67	92.39	86.23	87.06
50	97.64	97.64				
51	95.70	96.21	89.92	89.69		
52	94.16	94.83				
53	93.84	93.50				