



# SpaceInn Workshop 4.1

## *Peak-bagging in Helio- and Asteroseismology*

Implementation of a simple low degree-mode inversion technique



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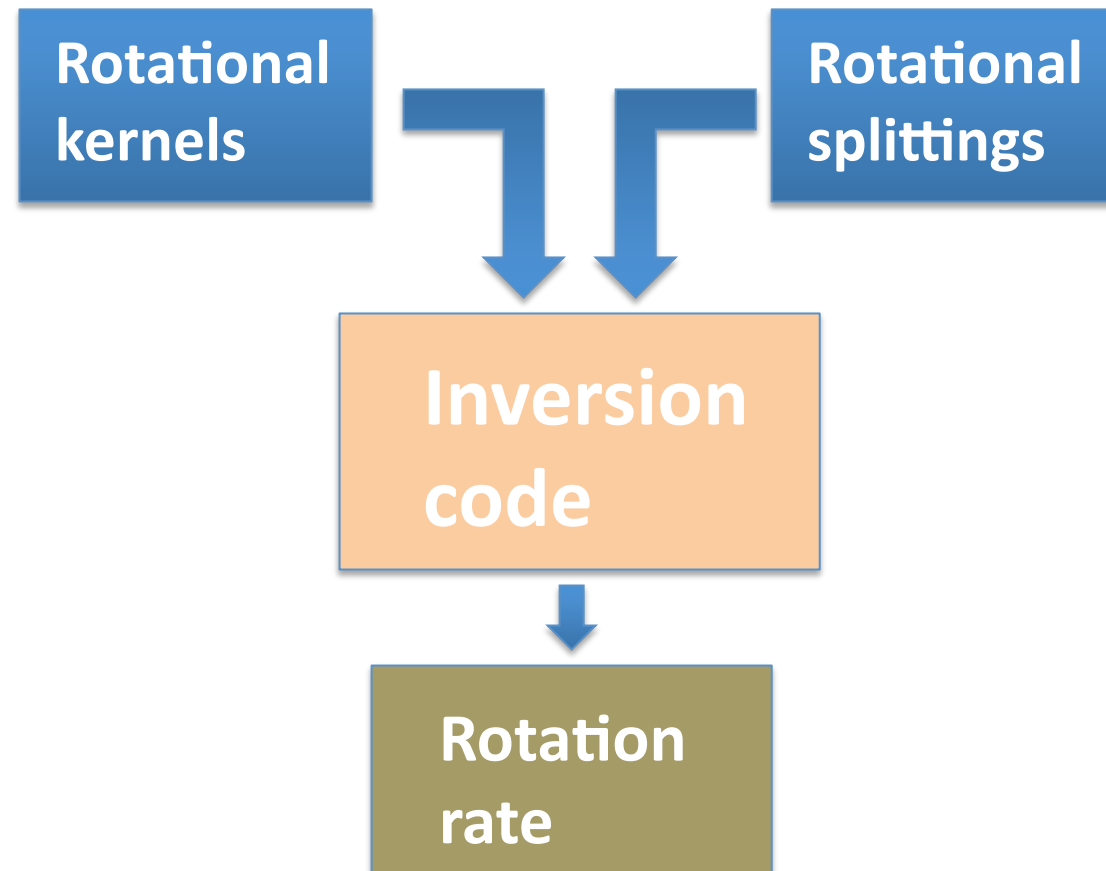


# Rationale

- To implement a simple standalone inversion code.
- It could give a quick view of the internal rotational rate of the sun and other stars.
- To be expanded in the near future to structure

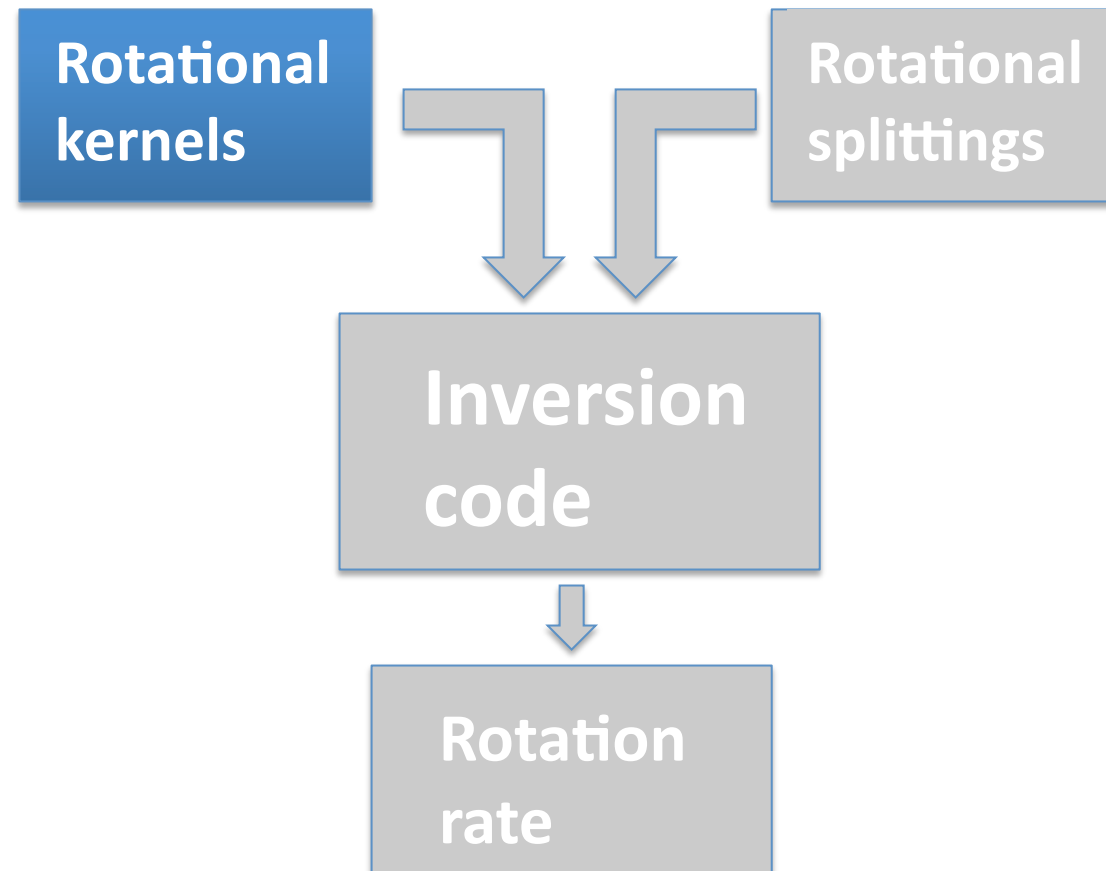


# The Concept



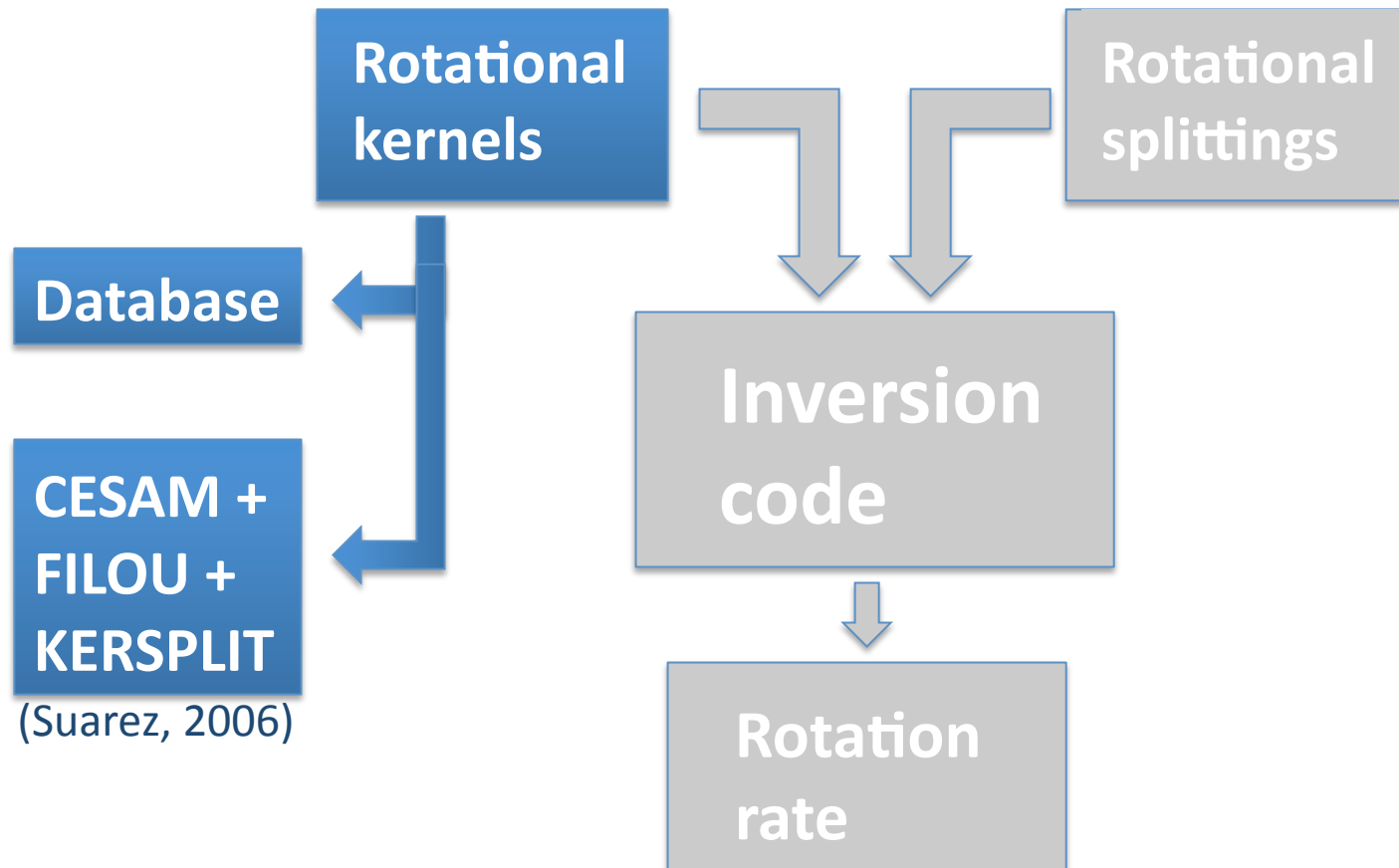


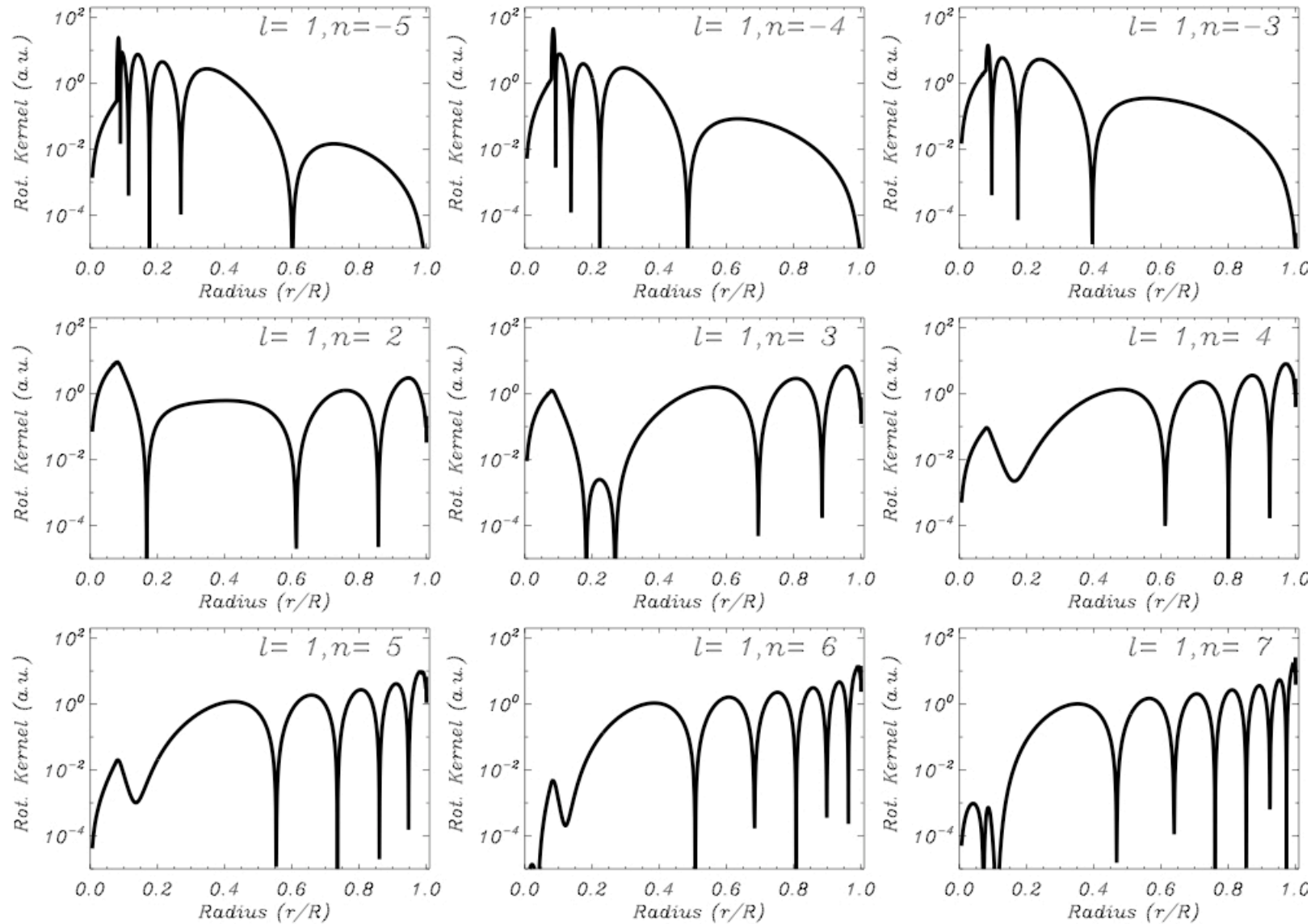
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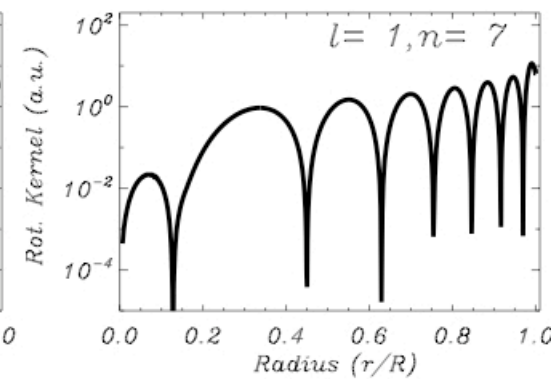
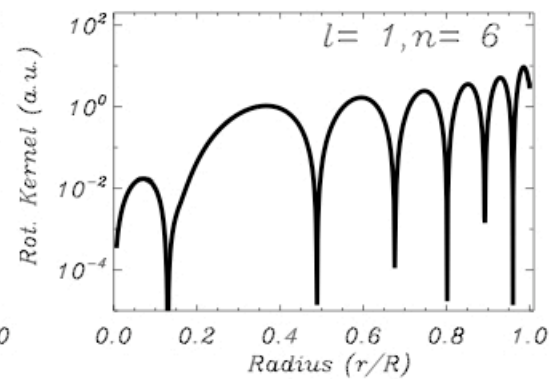
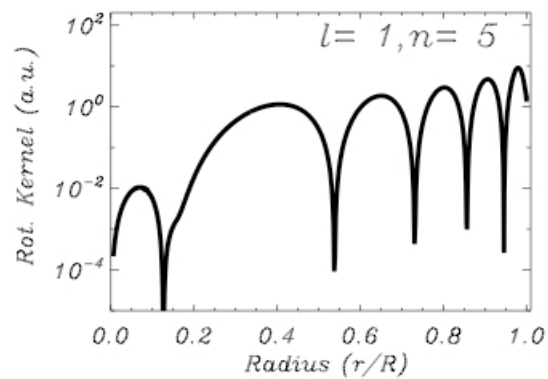
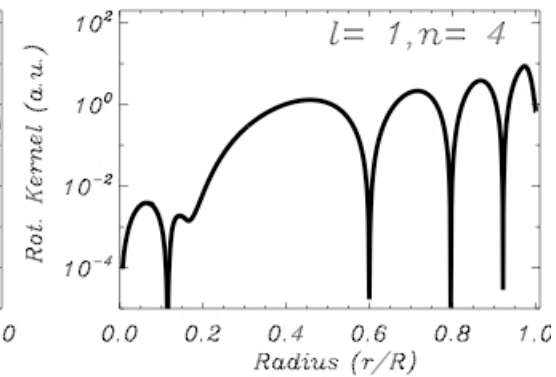
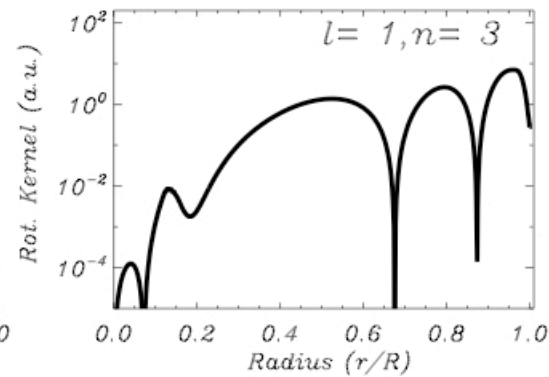
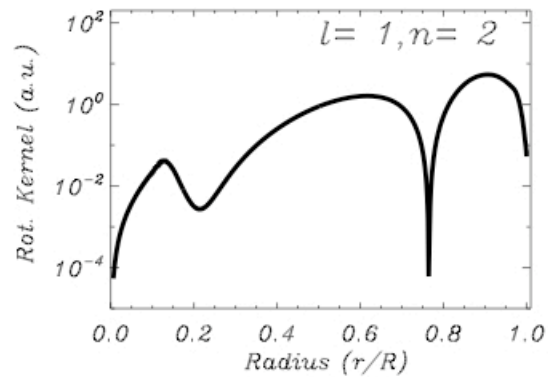
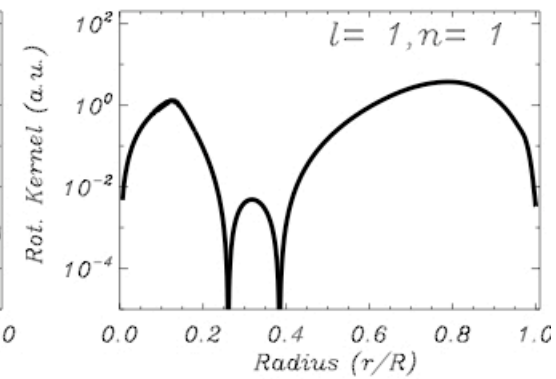
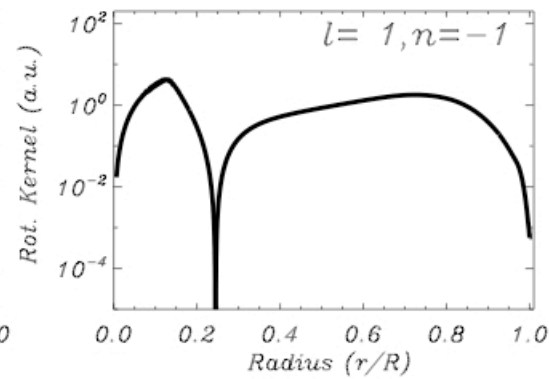
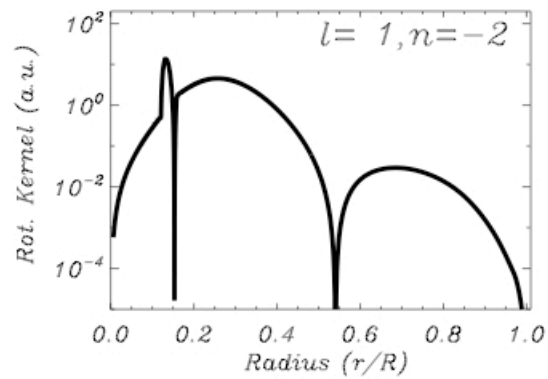


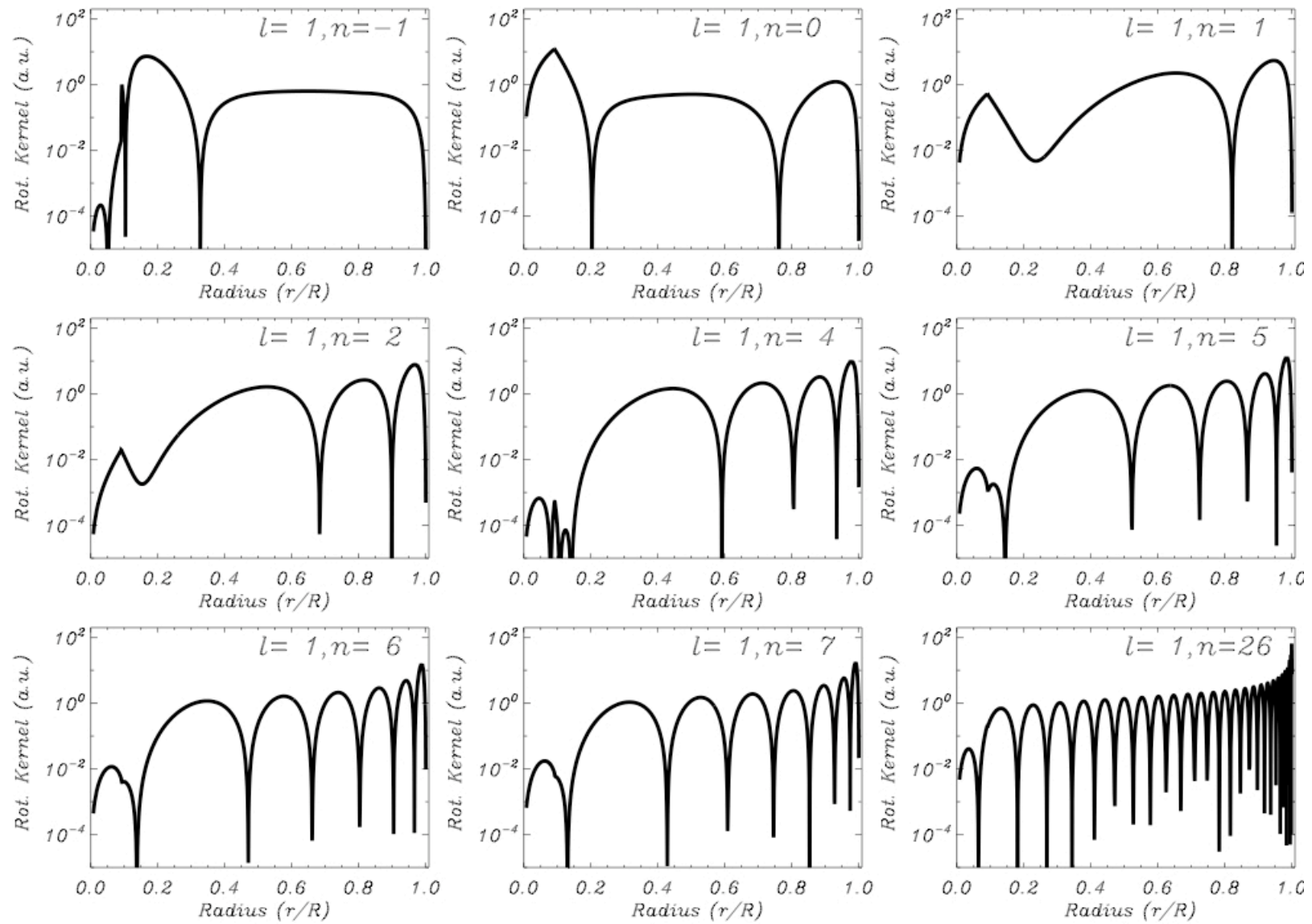


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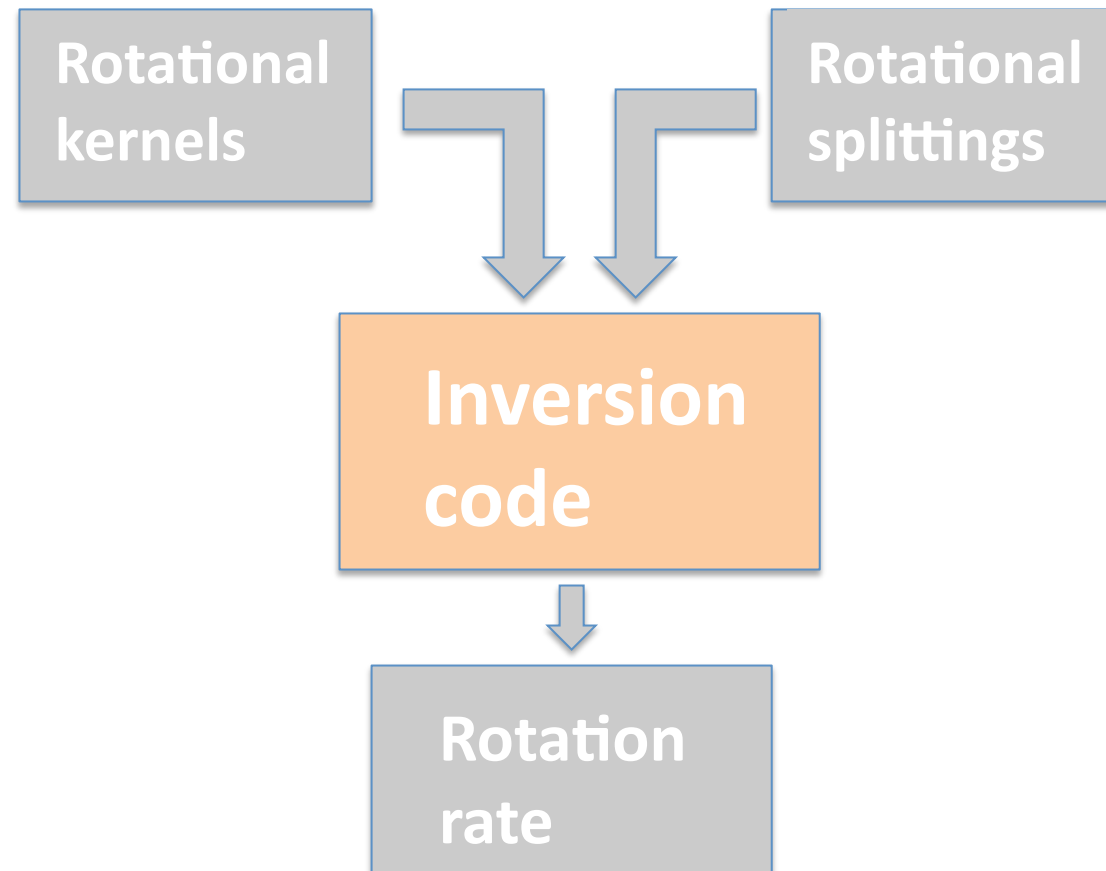






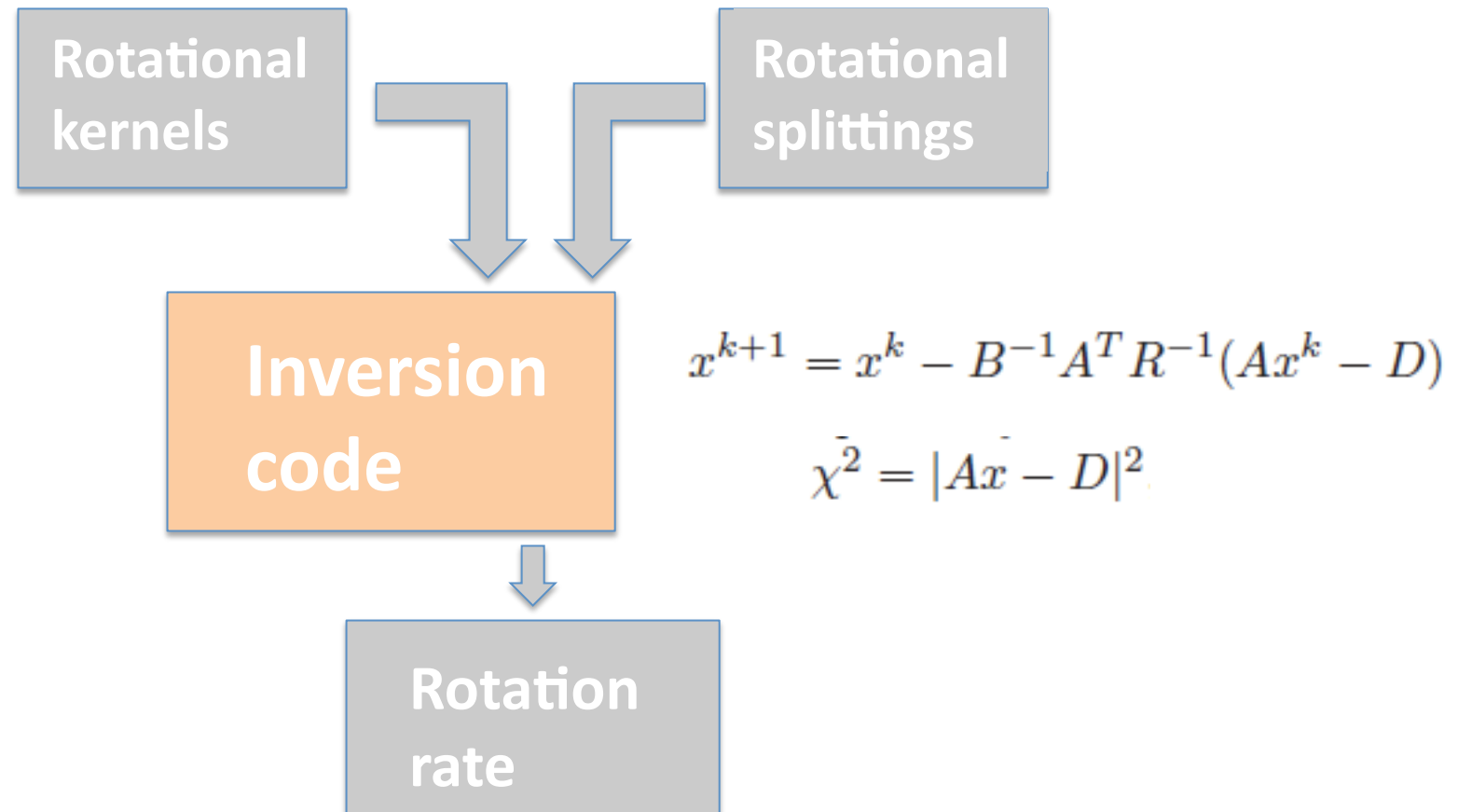


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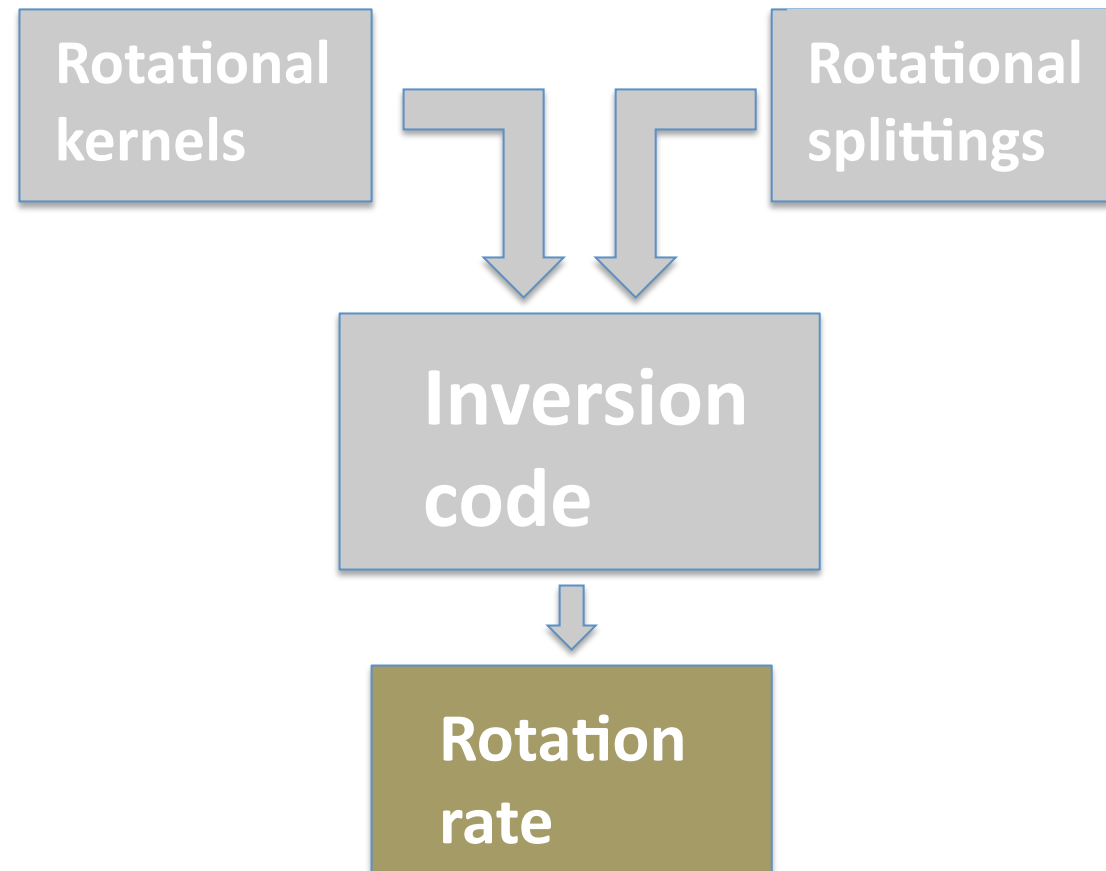


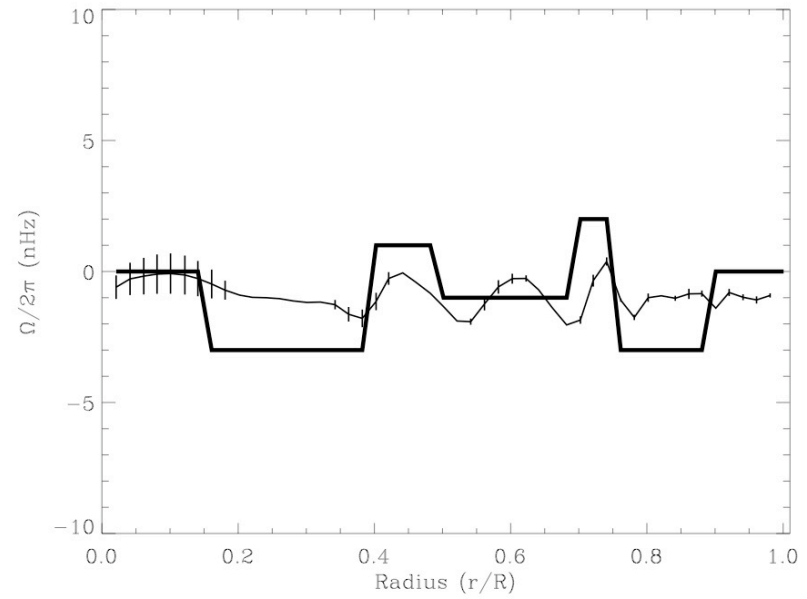
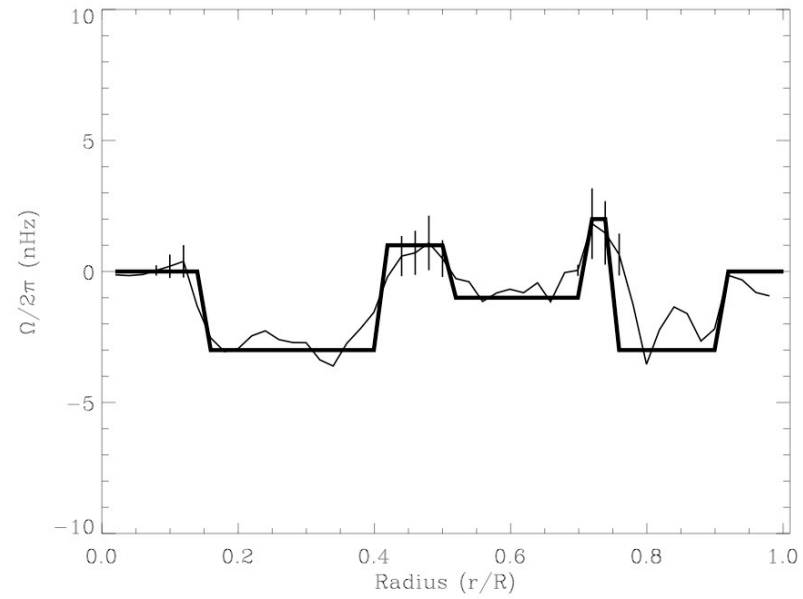
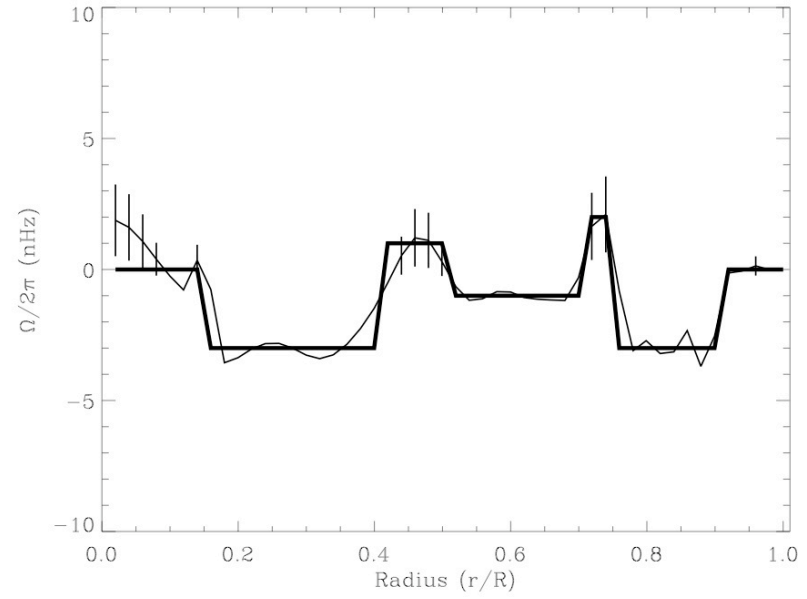
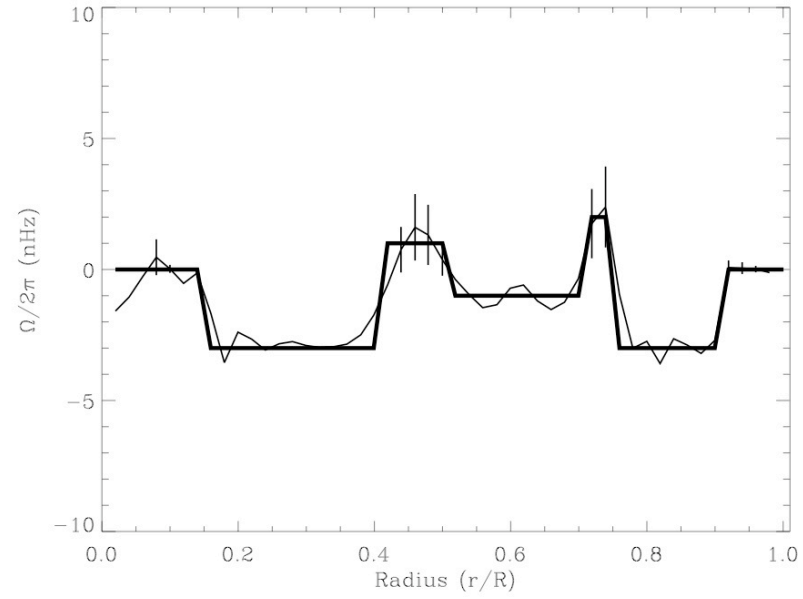
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# Real world results

Star	Ref. letter	$\Delta\nu$ ( $\mu\text{Hz}$ )	$\nu_{\text{max}}$ ( $\mu\text{Hz}$ )	$M$	$R$	$\log g$
KIC12508433	A	$45.3 \pm 0.2$	$793 \pm 21$	$1.20 \pm 0.16$	$2.20 \pm 0.10$	$3.83 \pm 0.04$
KIC8702606	B	$39.9 \pm 0.4$	$664 \pm 14$	$1.27 \pm 0.15$	$2.44 \pm 0.11$	$3.77 \pm 0.02$
KIC5689820	C	$41.0 \pm 0.3$	$695 \pm 15$	$1.11 \pm 0.16$	$2.29 \pm 0.12$	$3.76 \pm 0.04$
KIC8751420	D	$34.7 \pm 0.4$	$598 \pm 14$	$1.50 \pm 0.20$	$2.83 \pm 0.15$	$3.71 \pm 0.03$
KIC7799349	E	$33.7 \pm 0.4$	$561 \pm 8$	$1.33 \pm 0.14$	$2.77 \pm 0.12$	$3.68 \pm 0.02$
KIC9574283	F	$30.0 \pm 0.5$	$455 \pm 8$	$1.24 \pm 0.17$	$2.92 \pm 0.17$	$3.60 \pm 0.02$

## Seismic constraints on the radial dependence of the internal rotation profiles of six *Kepler* subgiants and young red giants

S. Deheuvels<sup>1,2</sup>, G. Doğan<sup>3,4</sup>, M. J. Goupil<sup>5</sup>, T. Appourchaux<sup>6</sup>, O. Benomar<sup>7</sup>, H. Bruntt<sup>4,8</sup>, T. L. Campante<sup>9,4</sup>, L. Casagrande<sup>10</sup>, T. Ceillier<sup>11</sup>, G. R. Davies<sup>9,11,4</sup>, P. De Cat<sup>12</sup>, J. N. Fu<sup>13</sup>, R. A. García<sup>11</sup>, A. Lobel<sup>12</sup>, B. Mosser<sup>5</sup>, D. R. Reese<sup>14</sup>, C. Regulo<sup>15,16</sup>, J. Schou<sup>20</sup>, T. Stahn<sup>17</sup>, A. O. Thygesen<sup>18</sup>, X. H. Yang<sup>13</sup>, W. J. Chaplin<sup>9,4</sup>, J. Christensen-Dalsgaard<sup>4</sup>, P. Eggenberger<sup>19</sup>, L. Gizon<sup>17,20</sup>, S. Mathis<sup>11</sup>, J. Molenda-Żakowicz<sup>21</sup>, and M. Pinsonneault<sup>22</sup>

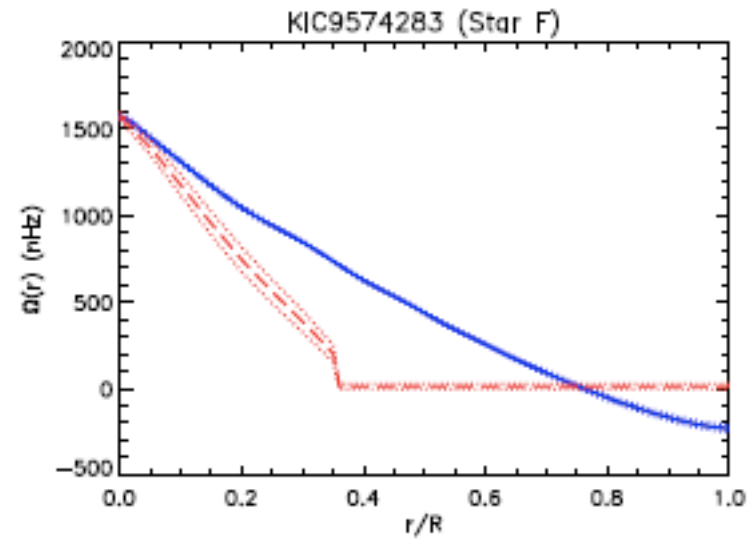


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$l$	$\nu_{n,l}$ ( $\mu\text{Hz}$ )	$\delta\nu_{n,l}$ ( $\mu\text{Hz}$ )
0	$312.285 \pm 0.100$	n.a.
0	$341.349 \pm 0.024$	n.a.
0	$370.549 \pm 0.018$	n.a.
0	$400.137 \pm 0.017$	n.a.
0	$429.818 \pm 0.018$	n.a.
0	$459.493 \pm 0.015$	n.a.
0	$489.424 \pm 0.042$	n.a.
0	$519.536 \pm 0.047$	n.a.
0	$581.219 \pm 0.233$	n.a.
1	$328.715 \pm 0.025$	$0.487^{+0.032}_{-0.037}$
1	$356.821 \pm 0.013$	$0.334^{+0.020}_{-0.020}$
1	$379.806 \pm 0.011$	$0.545^{+0.022}_{-0.010}$
1	$387.209 \pm 0.013$	$0.347^{+0.018}_{-0.020}$
1	$398.982 \pm 0.021$	$0.702^{+0.012}_{-0.020}$
1	$412.872 \pm 0.008$	$0.345^{+0.009}_{-0.010}$
1	$421.160 \pm 0.007$	$0.557^{+0.009}_{-0.009}$
1	$437.630 \pm 0.009$	$0.589^{+0.012}_{-0.013}$
1	$446.599 \pm 0.016$	$0.317^{+0.022}_{-0.023}$
1	$462.516 \pm 0.009$	$0.661^{+0.016}_{-0.009}$
1	$474.775 \pm 0.017$	$0.219^{+0.022}_{-0.025}$
1	$489.561 \pm 0.010$	$0.647^{+0.010}_{-0.011}$
1	$504.201 \pm 0.030$	-
1	$534.500 \pm 0.046$	-
2	$366.917 \pm 0.051$	-
2	$396.731 \pm 0.022$	$0.161^{0.014}_{-0.023}$

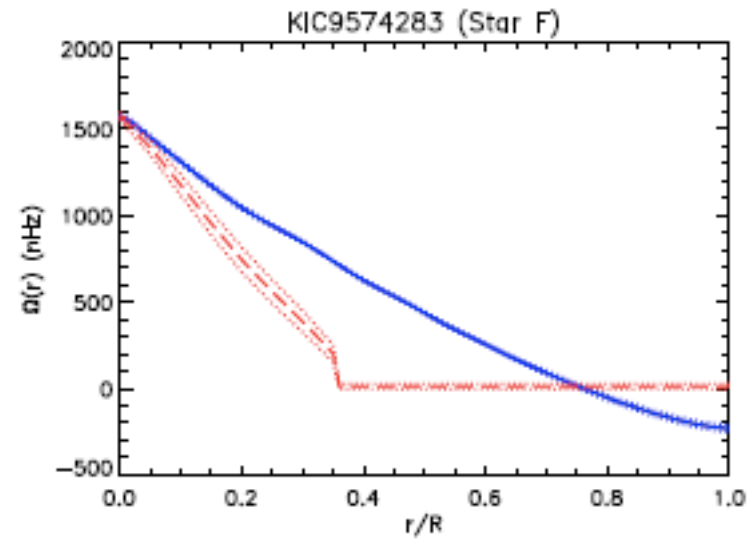
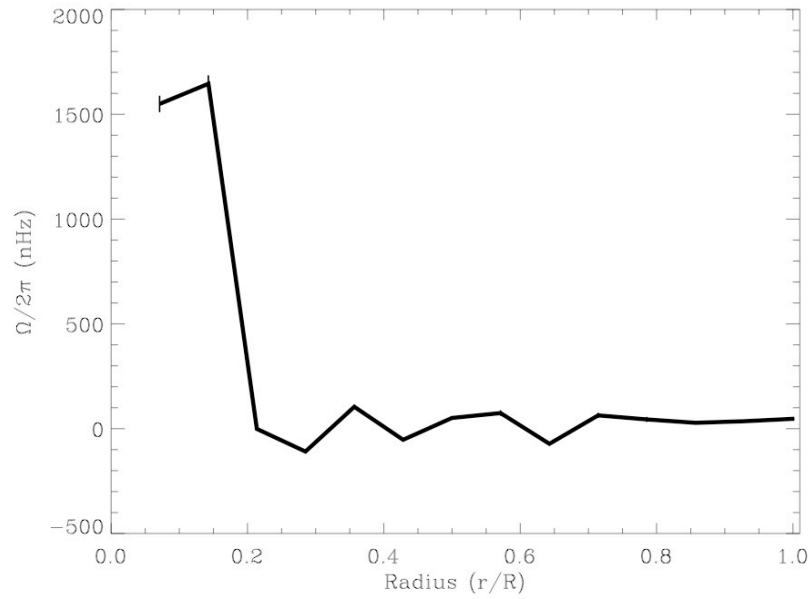


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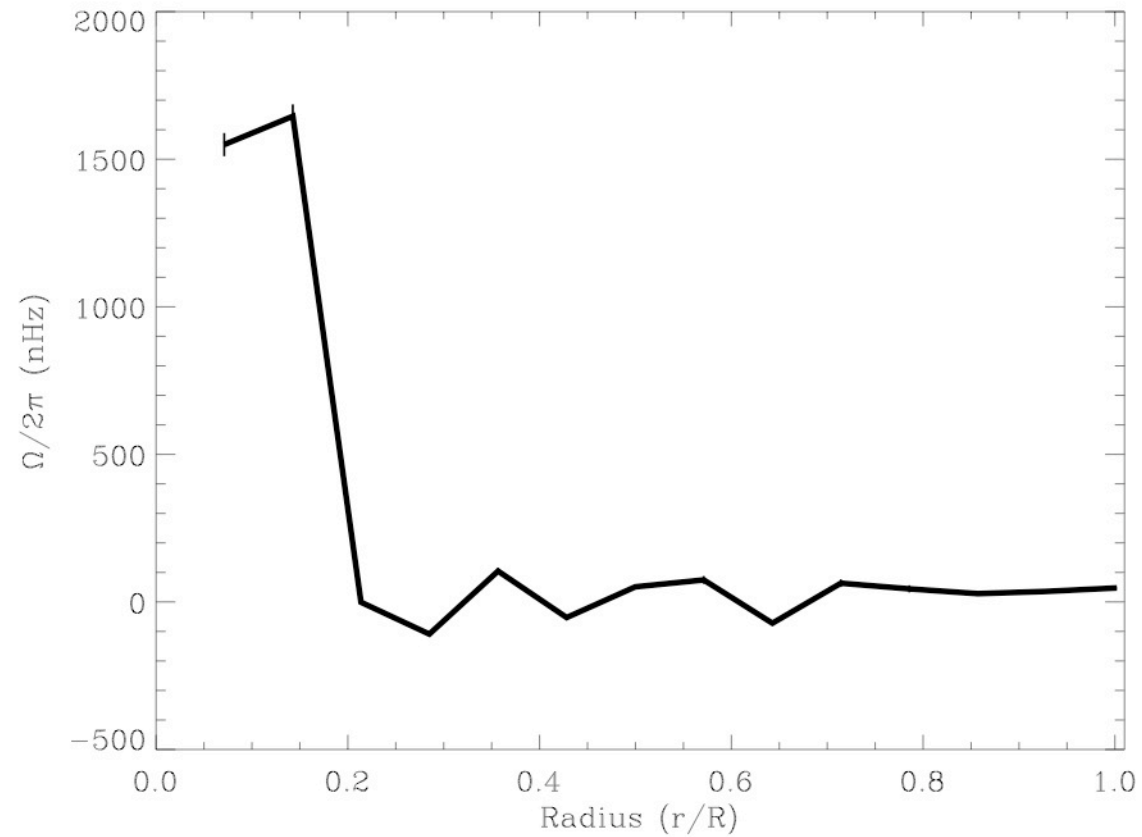
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