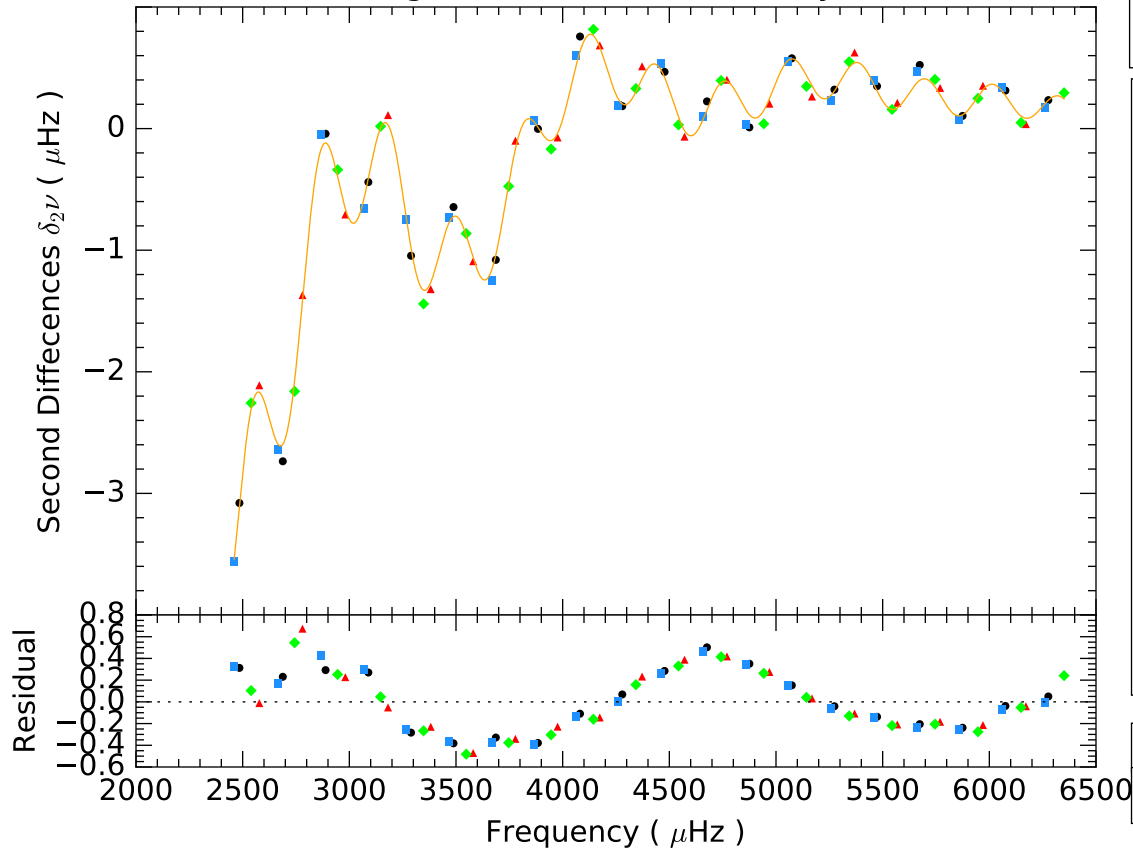


Age after ZAMS: 0.000 Gyr



$$a_0 = -8.4803 \mu\text{Hz}$$

$$a_1 = 0.0034206$$

$$a_2 = -3.2805e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013101$$

$$c_2 = 1.58e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 441.88 \text{ s}$$

$$\phi_{HeII} = 3.656$$

$$b_2 = 4.7409e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1589.0 \text{ s}$$

$$\phi_{CZ} = 0.85283$$

$$d_0 = 2.1221e-05$$

$$d_2 = 1.118e-09 \mu\text{Hz}^{-2}$$

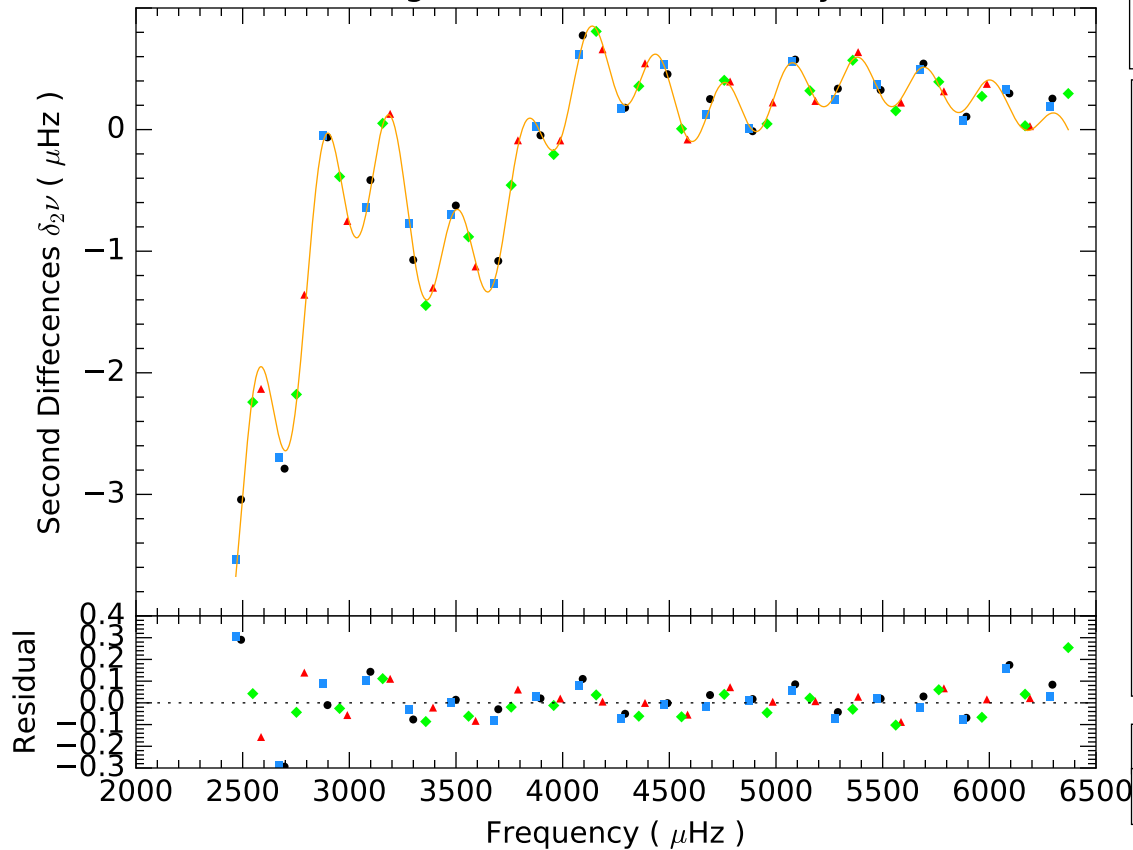
$$\tau_{HI} = 200.67 \text{ s}$$

$$\phi_{HI} = 3.878$$

profile1

$$\chi^2_\nu(\text{dof} = 65) = 0.092501$$

Age after ZAMS: 0.000 Gyr



$$a_0 = -8.9164 \mu\text{Hz}$$

$$a_1 = 0.0036439$$

$$a_2 = -3.5569e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012337$$

$$c_2 = 1.5383e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 439.96 \text{ s}$$

$$\phi_{HeII} = 3.621$$

$$b_2 = 5.6402e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1599.4 \text{ s}$$

$$\phi_{CZ} = 0.17165$$

$$d_0 = 2.2693e-05$$

$$d_2 = 1.2257e-10 \mu\text{Hz}^{-2}$$

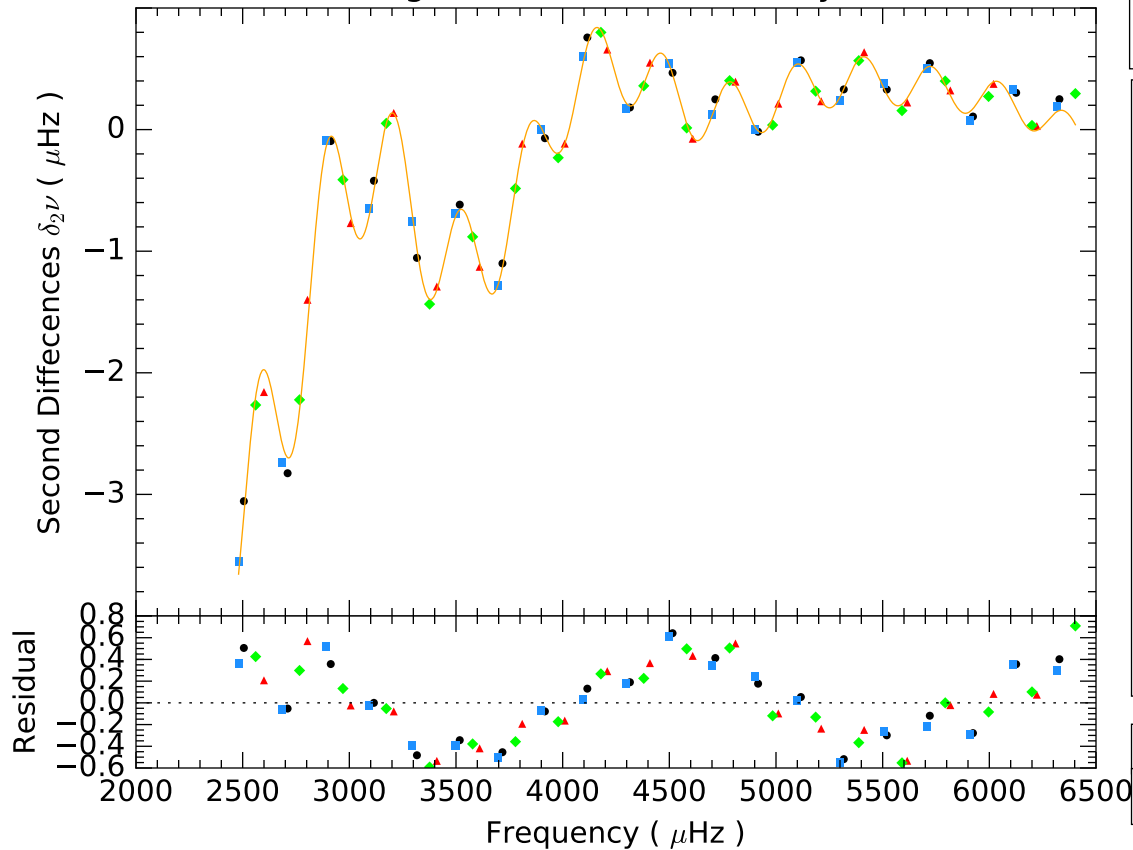
$$\tau_{HI} = 270.8 \text{ s}$$

$$\phi_{HI} = 3.6385e-07$$

profile2

$$\chi^2_\nu(\text{dof} = 65) = 0.011489$$

Age after ZAMS: 0.001 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.5374 \mu\text{Hz}$$

$$a_1 = 0.003443$$

$$a_2 = -3.3124e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0014172$$

$$c_2 = 1.6423e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 438.26 \text{ s}$$

$$\phi_{HeII} = 3.5158$$

$$b_2 = 5.7467e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1591.2 \text{ s}$$

$$\phi_{CZ} = 0.15527$$

$$d_0 = 6.2515e-05$$

$$d_2 = 4.2077e-08 \mu\text{Hz}^{-2}$$

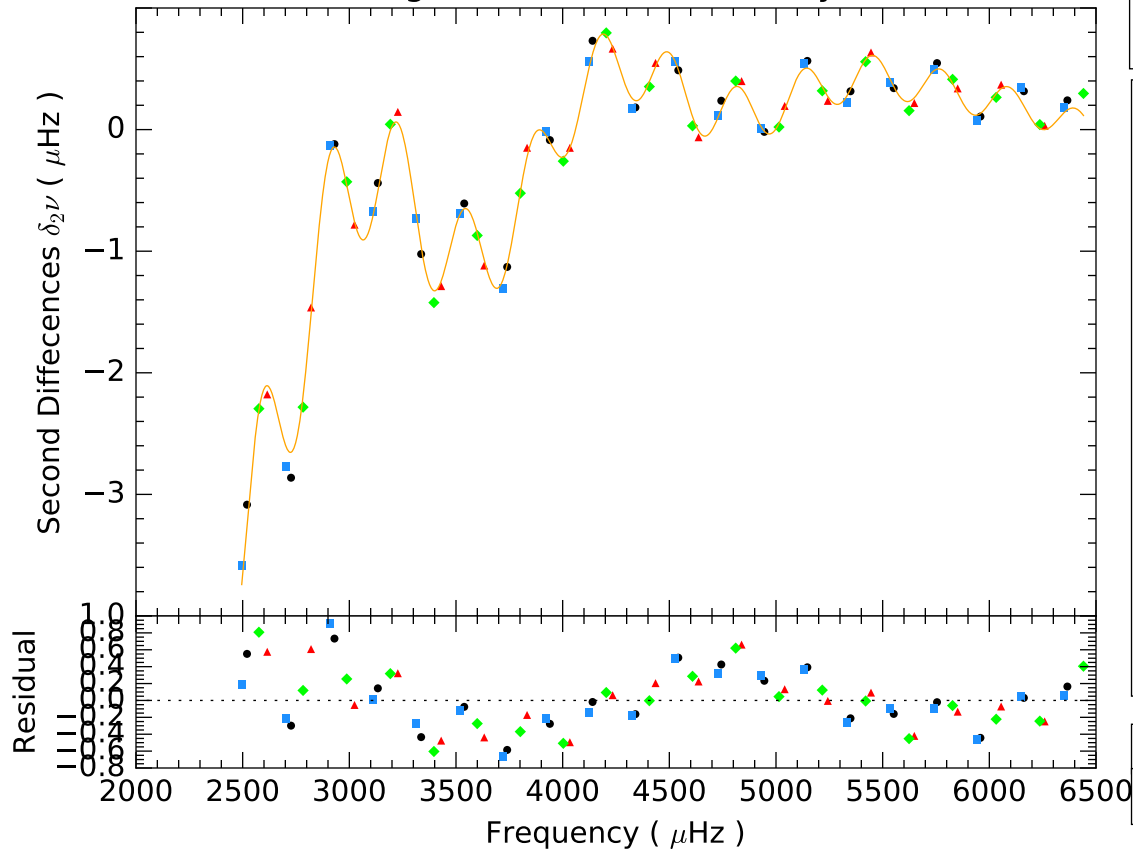
$$\tau_{HI} = 269.15 \text{ s}$$

$$\phi_{HI} = 0.009992$$

profile3

$$\chi^2_\nu(\text{dof} = 65) = 0.142$$

Age after ZAMS: 0.002 Gyr



$$a_0 = -8.8878 \mu\text{Hz}$$

$$a_1 = 0.0035408$$

$$a_2 = -3.3654e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0012264$$

$$c_2 = 1.4728e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 412.57 \text{ s}$$

$$\phi_{HeII} = 4.5402$$

$$b_2 = 5.3331e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1574.2 \text{ s}$$

$$\phi_{CZ} = 0.5085$$

$$d_0 = 5.6127e-05$$

$$d_2 = 4.4547e-08 \mu\text{Hz}^{-2}$$

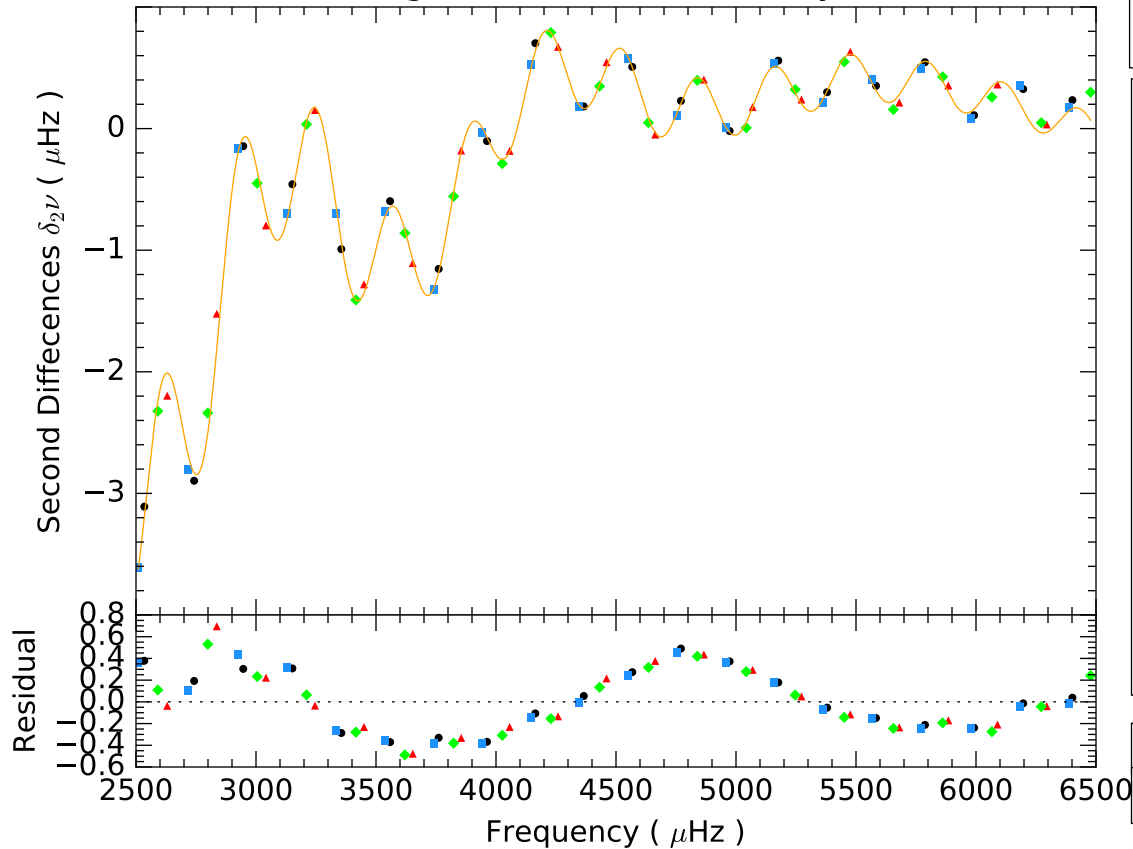
$$\tau_{HI} = 209.31 \text{ s}$$

$$\phi_{HI} = 3.5934$$

profile4

$$\chi^2_\nu(\text{dof} = 65) = 0.1527$$

Age after ZAMS: 0.004 Gyr



$$a_0 = -7.8178 \mu\text{Hz}$$

$$a_1 = 0.0030886$$

$$a_2 = -2.9057e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.00062606$$

$$c_2 = 1.2996e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 301.81 \text{ s}$$

$$\phi_{\text{HeII}} = 4.4935$$

$$b_2 = 6.1439e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1574.7 \text{ s}$$

$$\phi_{\text{CZ}} = 6.2824$$

$$d_0 = 0.003604$$

$$d_2 = 2.3609e-07 \mu\text{Hz}^{-2}$$

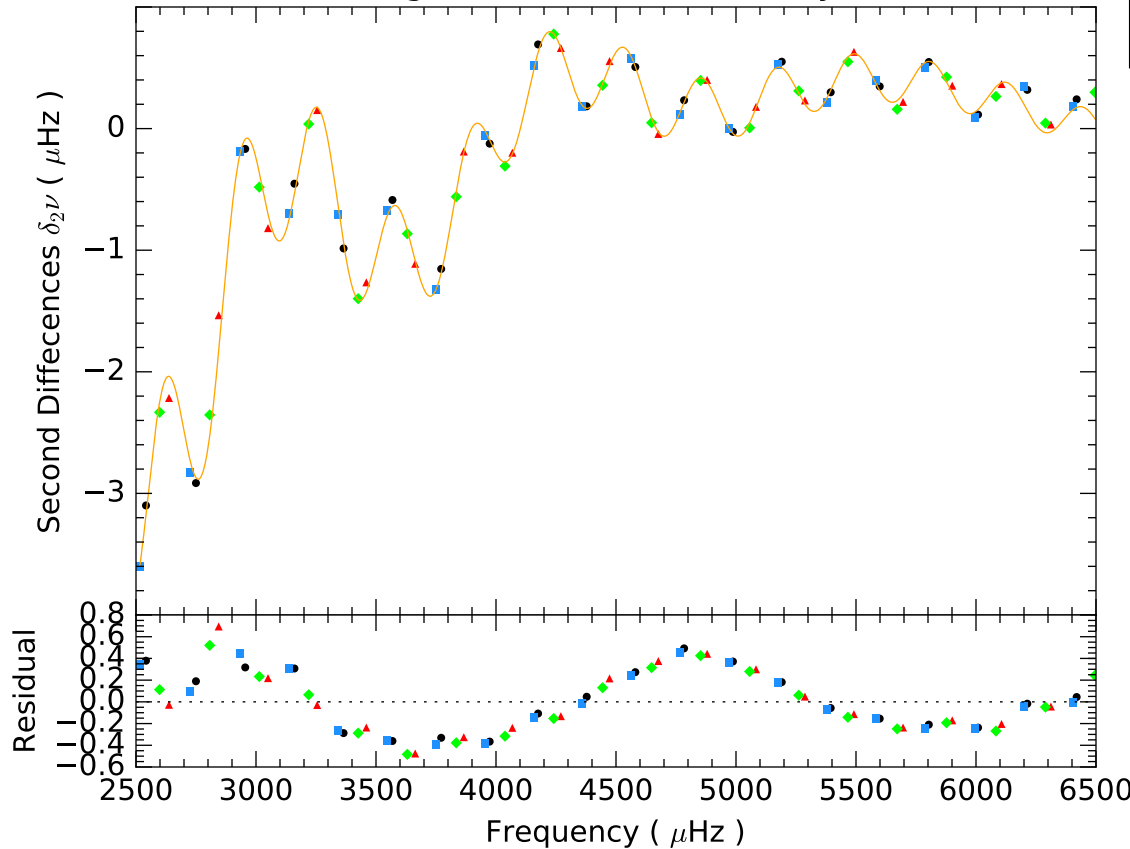
$$\tau_{\text{HI}} = 424.29 \text{ s}$$

$$\phi_{\text{HI}} = 3.4716$$

profile5

$$\chi^2_\nu(\text{dof} = 65) = 0.094776$$

Age after ZAMS: 0.007 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -7.6435 \mu\text{Hz}$$

$$a_1 = 0.0030063$$

$$a_2 = -2.8145e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013257$$

$$c_2 = 1.5452e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 315.63 \text{ s}$$

$$\phi_{HeII} = 3.7584$$

$$b_2 = 6.1878e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1570.6 \text{ s}$$

$$\phi_{CZ} = 0.00019908$$

$$d_0 = 0.0059566$$

$$d_2 = 2.6839e-07 \mu\text{Hz}^{-2}$$

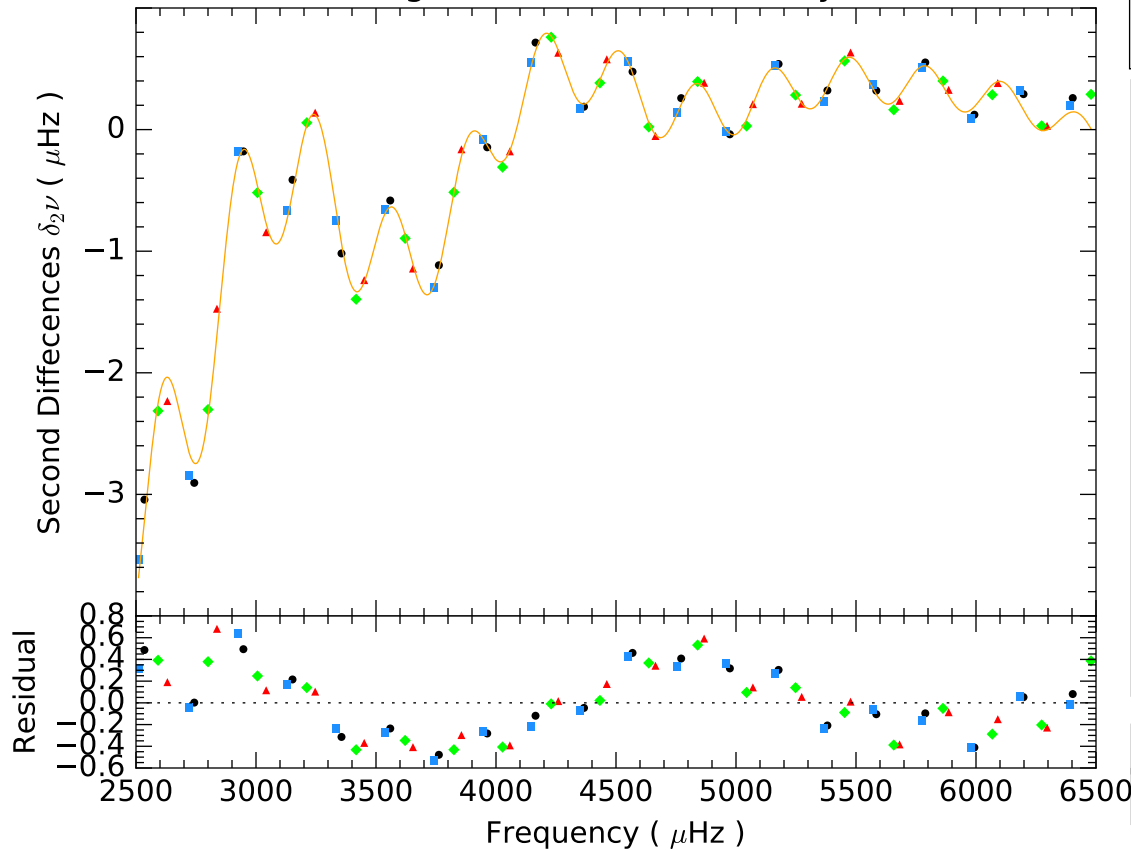
$$\tau_{HI} = 406.35 \text{ s}$$

$$\phi_{HI} = 3.8821$$

profile6

$$\chi^2_\nu(\text{dof} = 65) = 0.094683$$

Age after ZAMS: 0.013 Gyr



$$a_0 = -8.8349 \mu\text{Hz}$$

$$a_1 = 0.003521$$

$$a_2 = -3.3534e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012693$$

$$c_2 = 1.5415e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 427.4 \text{ s}$$

$$\phi_{HeII} = 3.6942$$

$$b_2 = 5.7156e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1574.9 \text{ s}$$

$$\phi_{CZ} = 0.067854$$

$$d_0 = 3.7212e-05$$

$$d_2 = 2.0988e-08 \mu\text{Hz}^{-2}$$

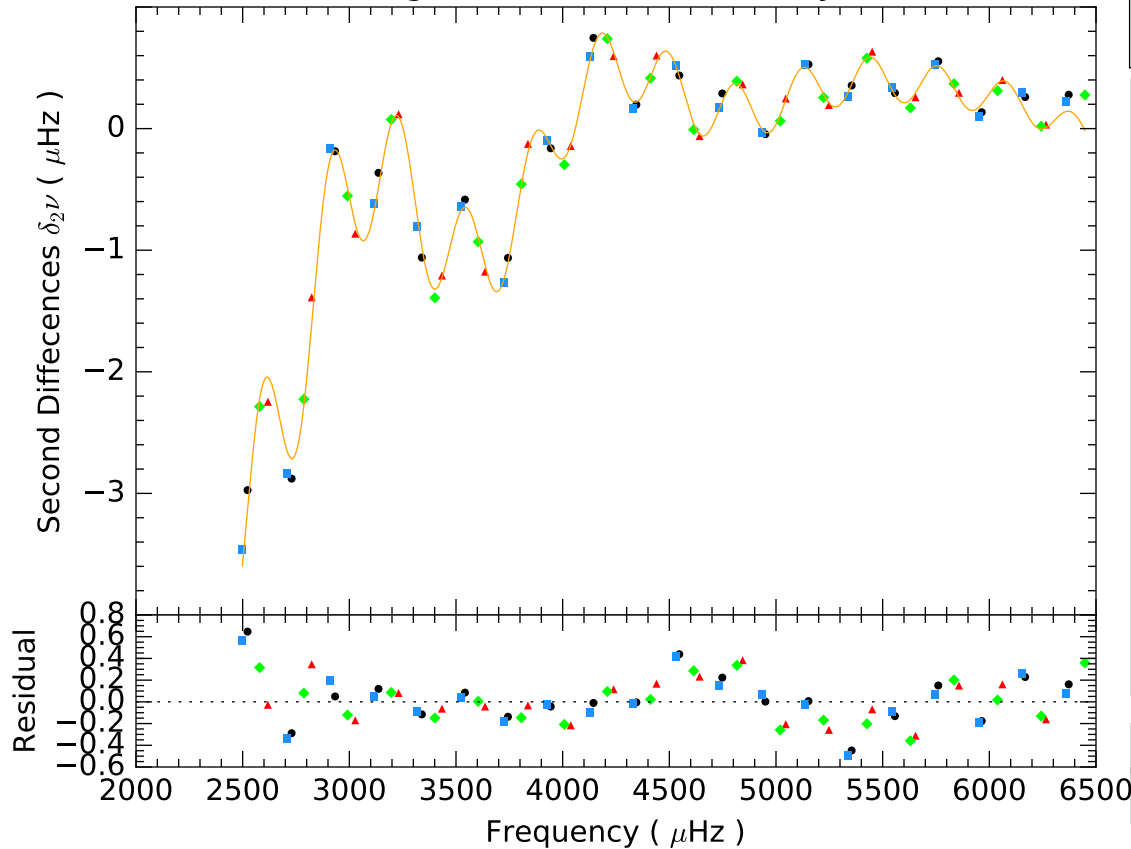
$$\tau_{HI} = 266.35 \text{ s}$$

$$\phi_{HI} = 7.6408e-06$$

profile7

$$\chi^2_\nu(\text{dof} = 65) = 0.11377$$

Age after ZAMS: 0.023 Gyr



$$a_0 = -8.8144 \mu\text{Hz}$$

$$a_1 = 0.0035352$$

$$a_2 = -3.3881e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0012518$$

$$c_2 = 1.5479e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 430.55 \text{ s}$$

$$\phi_{\text{HeII}} = 3.678$$

$$b_2 = 5.4788e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1583.4 \text{ s}$$

$$\phi_{\text{CZ}} = 0.10318$$

$$d_0 = 3.5518e-05$$

$$d_2 = 1.9141e-08 \mu\text{Hz}^{-2}$$

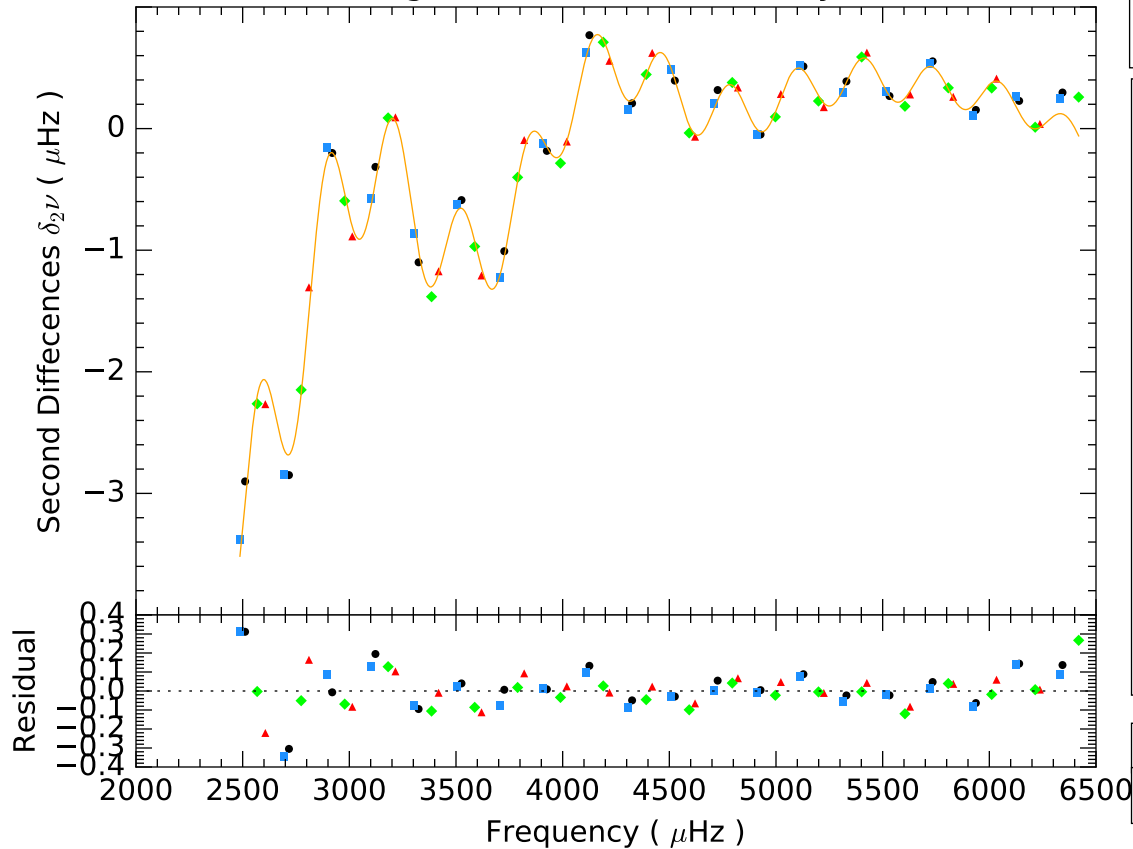
$$\tau_{\text{HI}} = 267.79 \text{ s}$$

$$\phi_{\text{HI}} = 0.00077969$$

profile8

$$\chi^2_\nu(\text{dof} = 65) = 0.059331$$

Age after ZAMS: 0.039 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.9872 \mu\text{Hz}$$

$$a_1 = 0.003637$$

$$a_2 = -3.5199e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0011843$$

$$c_2 = 1.5214e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 431.84 \text{ s}$$

$$\phi_{HeII} = 3.7523$$

$$b_2 = 5.2301e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1590.6 \text{ s}$$

$$\phi_{CZ} = 0.19421$$

$$d_0 = 2.1944e-05$$

$$d_2 = 5.9052e-11 \mu\text{Hz}^{-2}$$

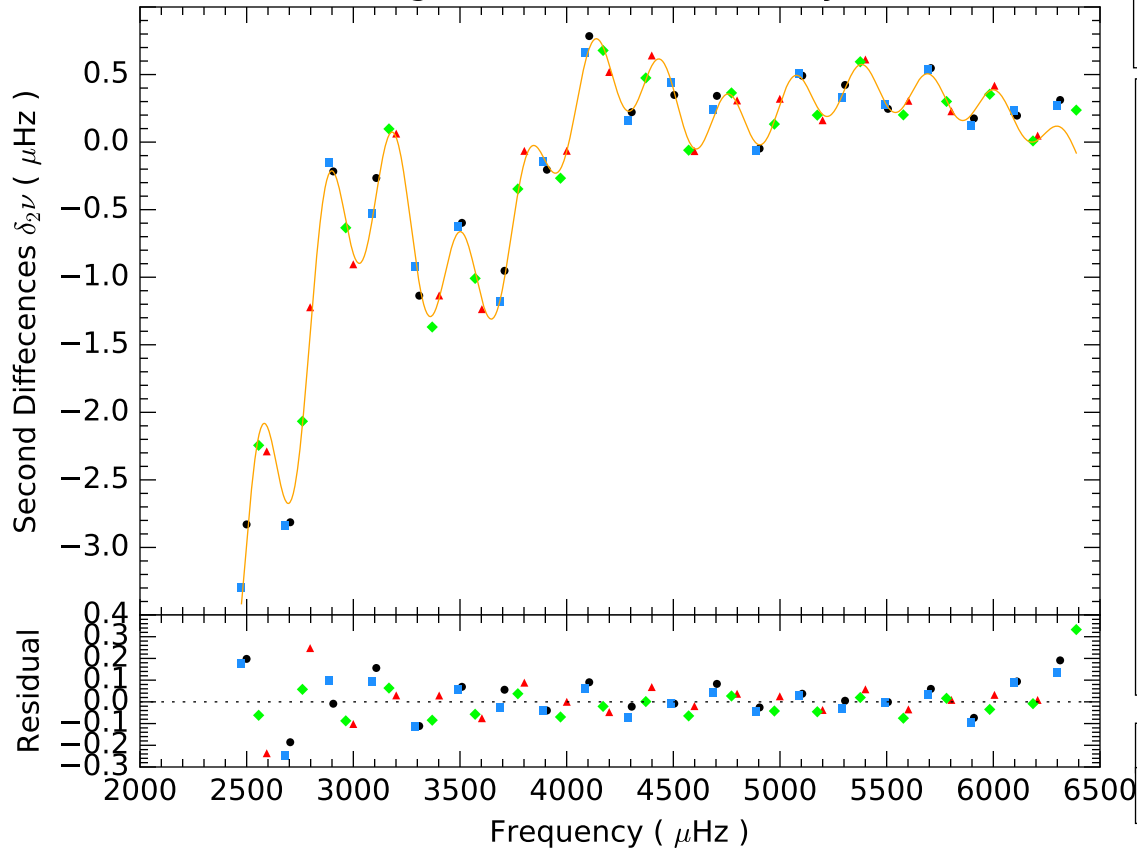
$$\tau_{HI} = 269.61 \text{ s}$$

$$\phi_{HI} = 3.7868e-05$$

profile9

$$\chi^2_\nu(\text{dof} = 65) = 0.014109$$

Age after ZAMS: 0.068 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.9585 \mu\text{Hz}$$

$$a_1 = 0.0036463$$

$$a_2 = -3.5491e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0011931$$

$$c_2 = 1.5435e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 434.67 \text{ s}$$

$$\phi_{\text{HeII}} = 3.7448$$

$$b_2 = 5.0477e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1597.9 \text{ s}$$

$$\phi_{\text{CZ}} = 0.296$$

$$d_0 = 2.2113e-05$$

$$d_2 = 1e-10 \mu\text{Hz}^{-2}$$

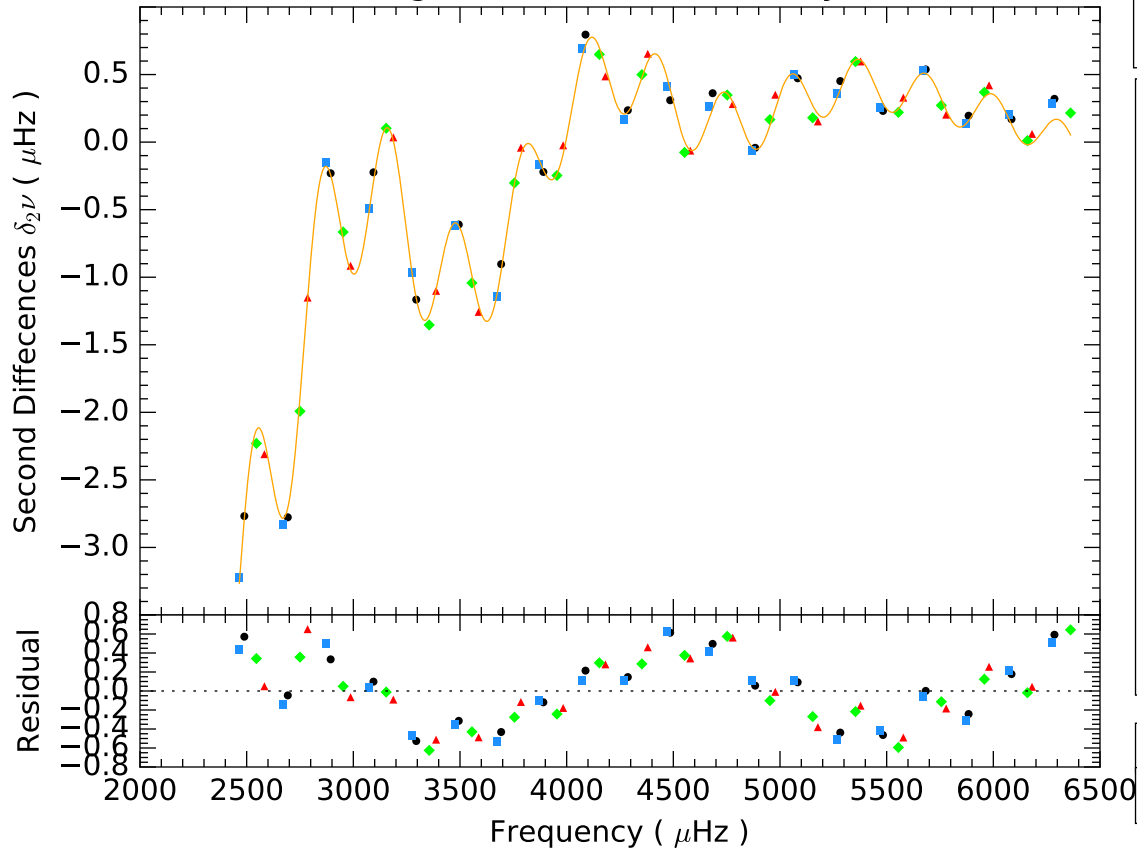
$$\tau_{\text{HI}} = 271.22 \text{ s}$$

$$\phi_{\text{HI}} = 9.9056e-07$$

profile10

$$\chi^2_\nu(\text{dof} = 65) = 0.010676$$

Age after ZAMS: 0.118 Gyr



$$a_0 = -8.702 \mu\text{Hz}$$

$$a_1 = 0.0035184$$

$$a_2 = -3.3948e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012753$$

$$c_2 = 1.5608e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 417.89 \text{ s}$$

$$\phi_{HeII} = 4.576$$

$$b_2 = 5.454e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1591.7 \text{ s}$$

$$\phi_{CZ} = 1.0387$$

$$d_0 = 7.4885e-05$$

$$d_2 = 5.9111e-08 \mu\text{Hz}^{-2}$$

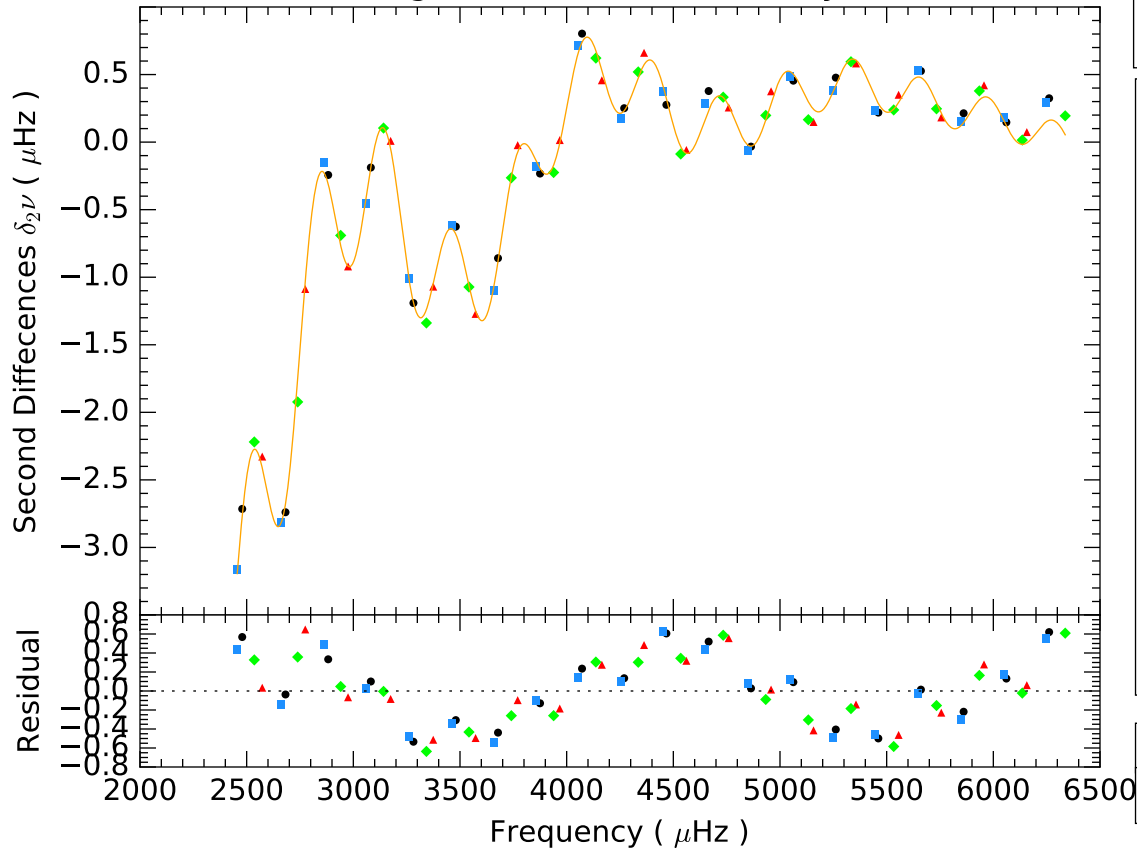
$$\tau_{HI} = 220.65 \text{ s}$$

$$\phi_{HI} = 3.1505$$

profile11

$$\chi^2_\nu(\text{dof} = 65) = 0.15186$$

Age after ZAMS: 0.205 Gyr



$\ell=0$ (black circle)
 $\ell=1$ (red triangle)
 $\ell=2$ (blue square)
 $\ell=3$ (green diamond)
 fit (orange line)

$a_0 = -8.8076 \mu\text{Hz}$
 $a_1 = 0.0035721$
 $a_2 = -3.4575e-07 \mu\text{Hz}^{-2}$

$c_0 = 0.0012678$
 $c_2 = 1.54e-07 \mu\text{Hz}^{-2}$
 $\tau_{HeII} = 425.13 \text{ s}$
 $\phi_{HeII} = 4.4117$

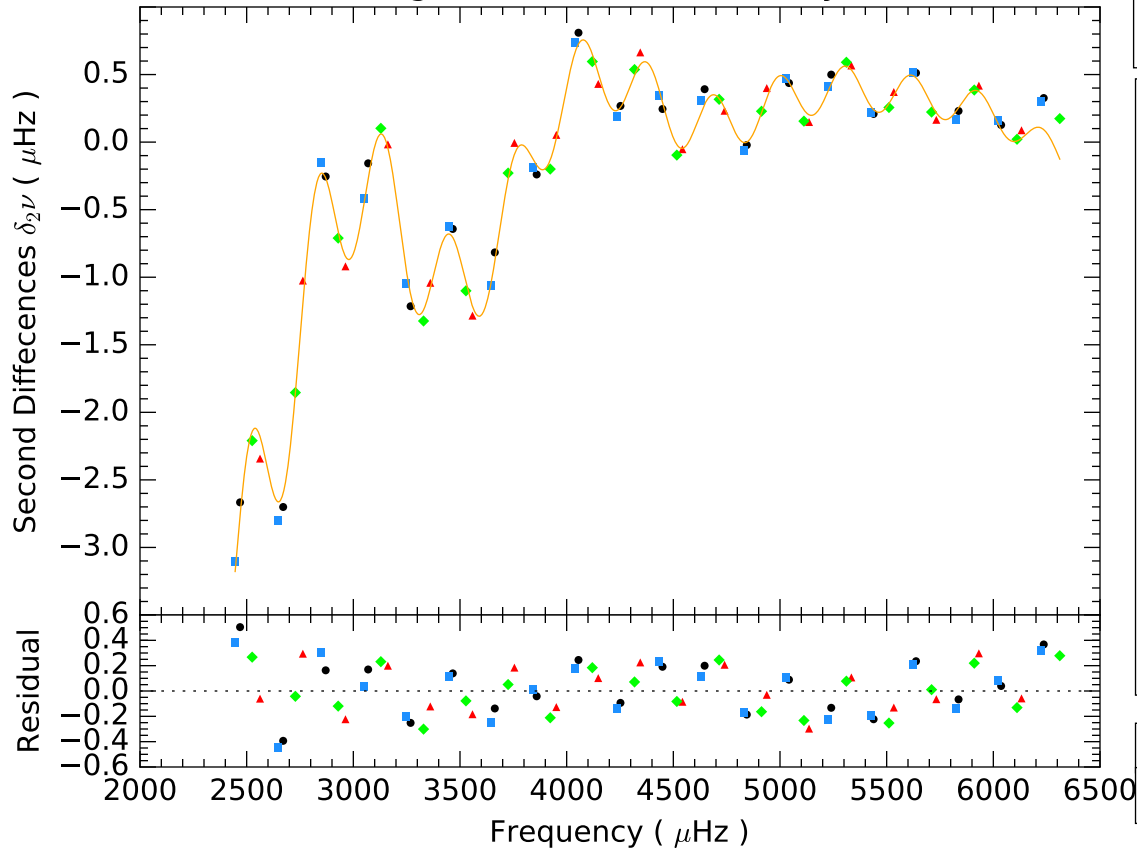
$b_2 = 5.123e+06 \text{ mHz}^3$
 $\tau_{CZ} = 1593.8 \text{ s}$
 $\phi_{CZ} = 1.3649$

$d_0 = 7.9943e-05$
 $d_2 = 6.5092e-08 \mu\text{Hz}^{-2}$
 $\tau_{HI} = 200.78 \text{ s}$
 $\phi_{HI} = 4.3684$

profile12

$\chi^2_\nu(\text{dof} = 65) = 0.15345$

Age after ZAMS: 0.354 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -8.891 \mu\text{Hz}$$

$$a_1 = 0.0036747$$

$$a_2 = -3.6309e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012308$$

$$c_2 = 1.6081e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 442.63 \text{ s}$$

$$\phi_{\text{HeII}} = 3.7094$$

$$b_2 = 4.7016e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1616.6 \text{ s}$$

$$\phi_{\text{CZ}} = 0.5773$$

$$d_0 = 2.2663e-05$$

$$d_2 = 1e-10 \mu\text{Hz}^{-2}$$

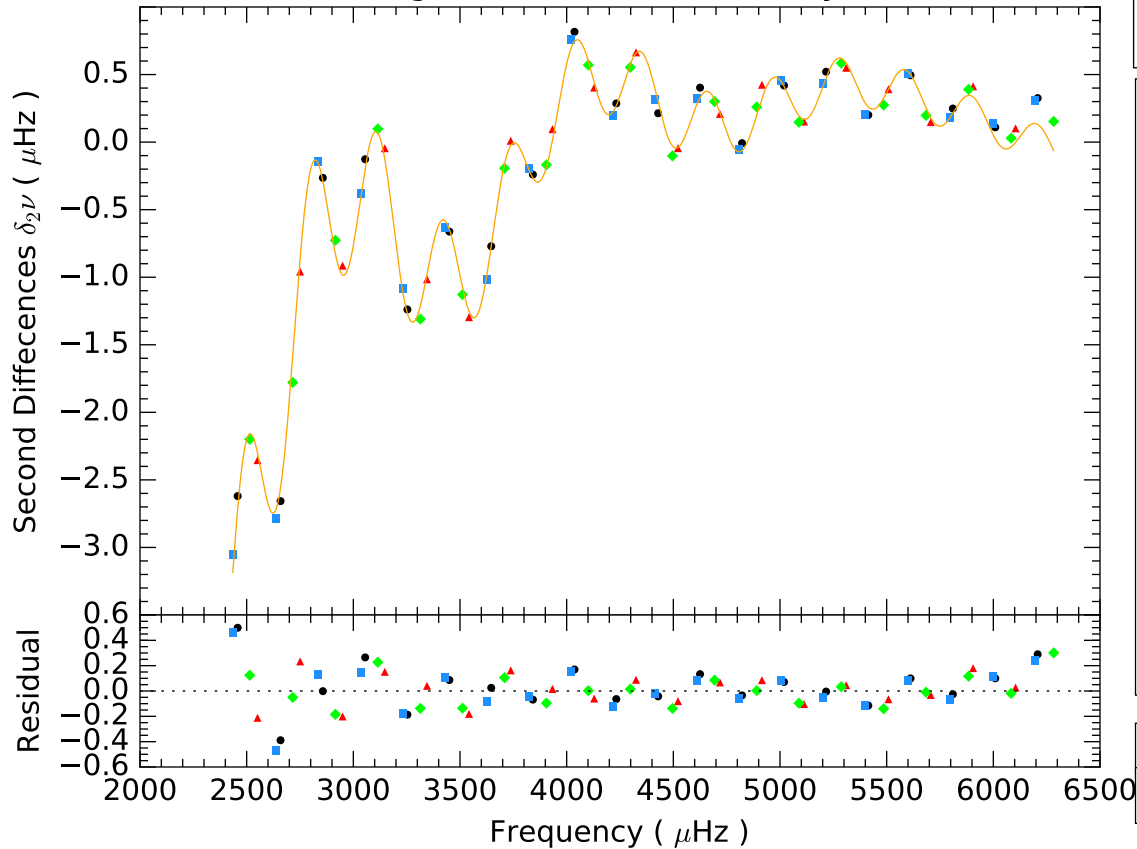
$$\tau_{\text{HI}} = 275.22 \text{ s}$$

$$\phi_{\text{HI}} = 5.512e-05$$

profile13

$$\chi^2_{\nu}(\text{dof} = 65) = 0.050432$$

Age after ZAMS: 0.610 Gyr



$$a_0 = -8.6206 \mu\text{Hz}$$

$$a_1 = 0.003531$$

$$a_2 = -3.4532e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.001472$$

$$c_2 = 1.6589e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 404.4 \text{ s}$$

$$\phi_{HeII} = 5.4773$$

$$b_2 = 5.3084e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1618.1 \text{ s}$$

$$\phi_{CZ} = 1.0645$$

$$d_0 = 0.00029612$$

$$d_2 = 1.303e-07 \mu\text{Hz}^{-2}$$

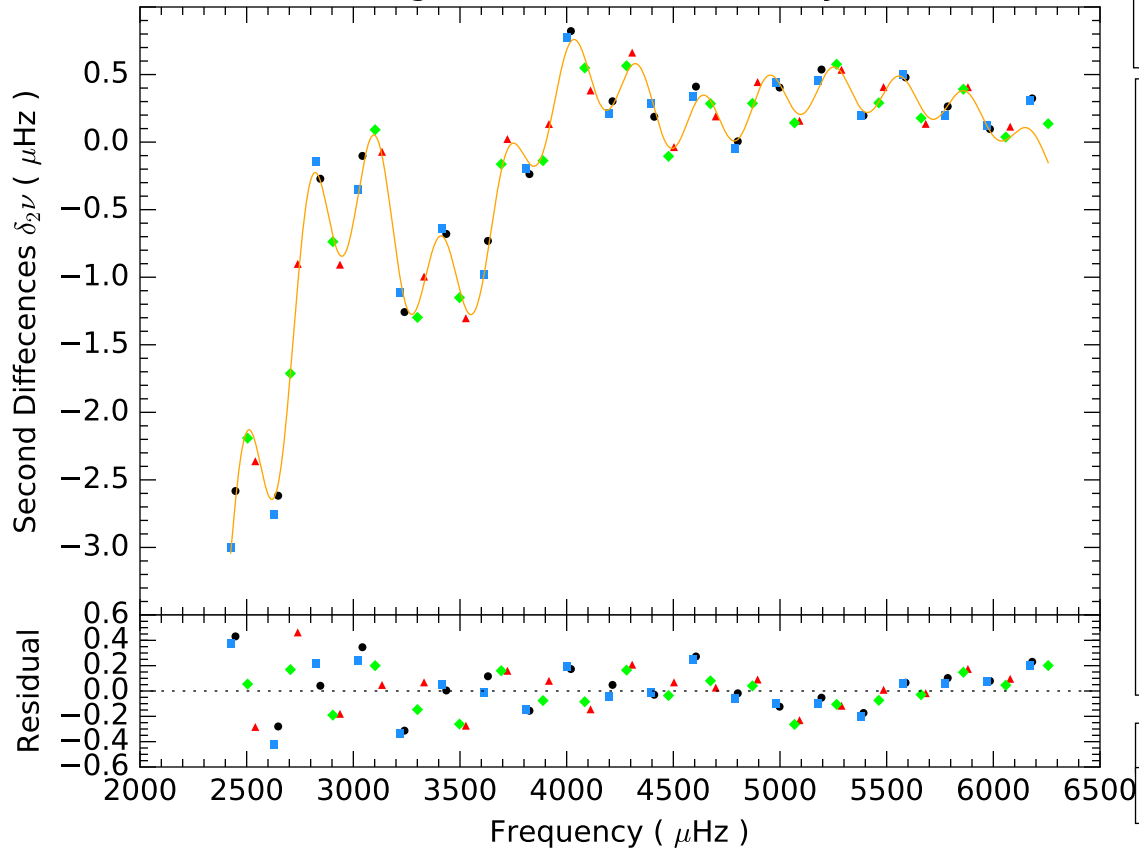
$$\tau_{HI} = 221.49 \text{ s}$$

$$\phi_{HI} = 3.5546$$

profile14

$$\chi^2_\nu(\text{dof} = 65) = 0.030865$$

Age after ZAMS: 0.910 Gyr



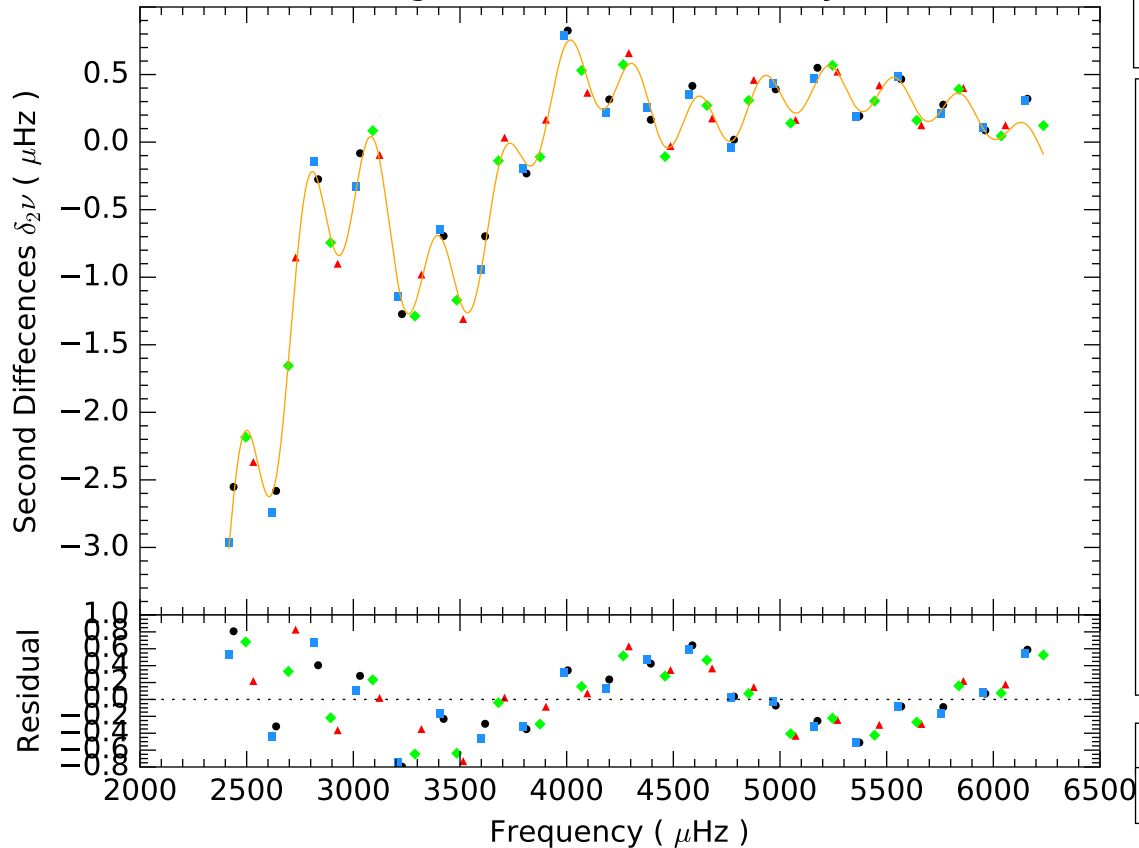
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -8.8411 \mu \text{ Hz} \\
 a_1 &= 0.0036949 \\
 a_2 &= -3.6904e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.0012501 \\
 c_2 &= 1.6436e-07 \mu\text{Hz}^{-2} \\
 \tau_{HeII} &= 448.91 \text{ s} \\
 \phi_{HeII} &= 3.6674 \\
 b_2 &= 4.5024e+06 \text{ mHz}^3 \\
 \tau_{CZ} &= 1630.3 \text{ s} \\
 \phi_{CZ} &= 0.73023 \\
 d_0 &= 2.3081e-05 \\
 d_2 &= 1e-10 \mu\text{Hz}^{-2} \\
 \tau_{HI} &= 277.89 \text{ s} \\
 \phi_{HI} &= 1e-10
 \end{aligned}$$

profile15

$$\chi^2_\nu(\text{dof} = 65) = 0.039608$$

Age after ZAMS: 1.210 Gyr



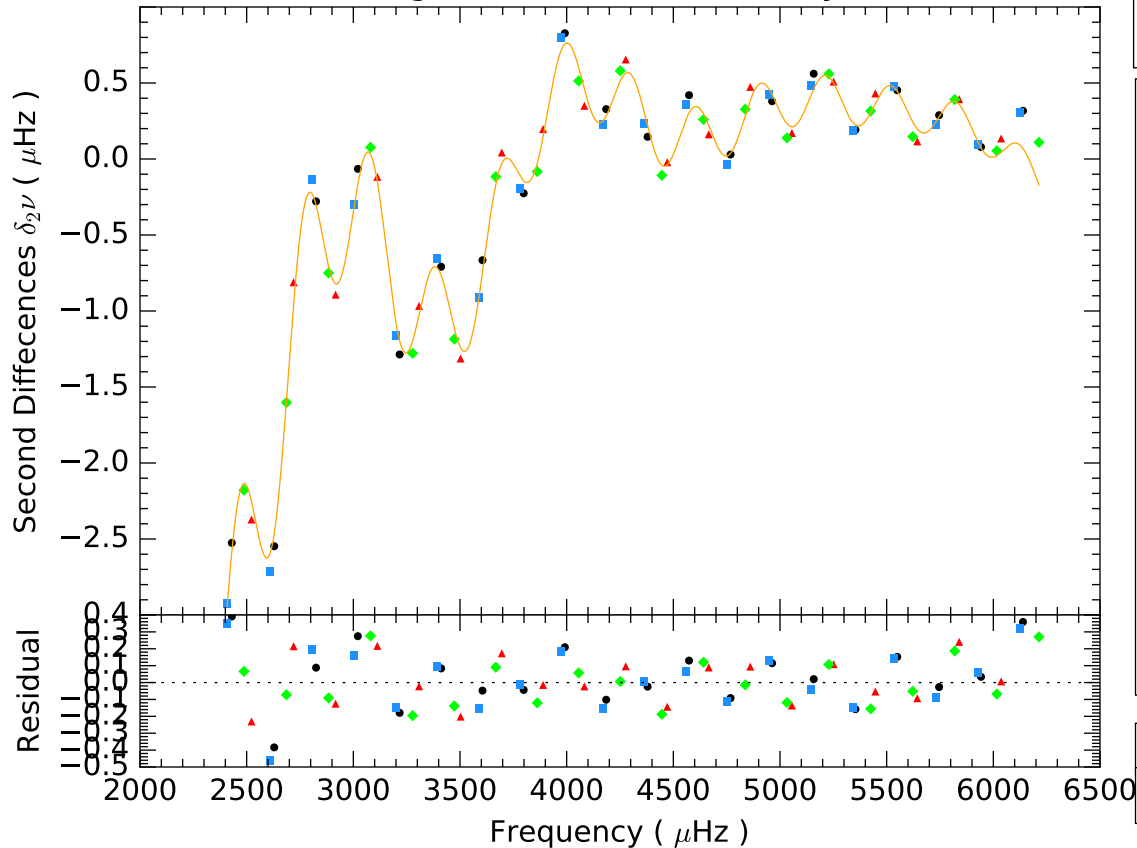
$\bullet \ell=0$ $\blacklozenge \ell=3$
 $\blacktriangle \ell=1$ — fit
 $\blacksquare \ell=2$

$a_0 = -8.5865 \mu\text{Hz}$
 $a_1 = 0.0035835$
 $a_2 = -3.5689e-07 \mu\text{Hz}^{-2}$
 $c_0 = 0.0013243$
 $c_2 = 1.6849e-07 \mu\text{Hz}^{-2}$
 $\tau_{HeII} = 444.77 \text{ s}$
 $\phi_{HeII} = 3.915$
 $b_2 = 4.4172e+06 \text{ mHz}^3$
 $\tau_{CZ} = 1636.2 \text{ s}$
 $\phi_{CZ} = 0.78843$
 $d_0 = 4.2824e-05$
 $d_2 = 3.0502e-08 \mu\text{Hz}^{-2}$
 $\tau_{HI} = 259.7 \text{ s}$
 $\phi_{HI} = 1.1536$

profile16

$\chi^2_\nu(\text{dof} = 65) = 0.18836$

Age after ZAMS: 1.510 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.7981 \mu\text{Hz}$$

$$a_1 = 0.0037099$$

$$a_2 = -3.7375e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012612$$

$$c_2 = 1.6678e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 454.08 \text{ s}$$

$$\phi_{HeII} = 3.6318$$

$$b_2 = 4.3385e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1641.4 \text{ s}$$

$$\phi_{CZ} = 0.84893$$

$$d_0 = 2.3387e-05$$

$$d_2 = 4.7301e-11 \mu\text{Hz}^{-2}$$

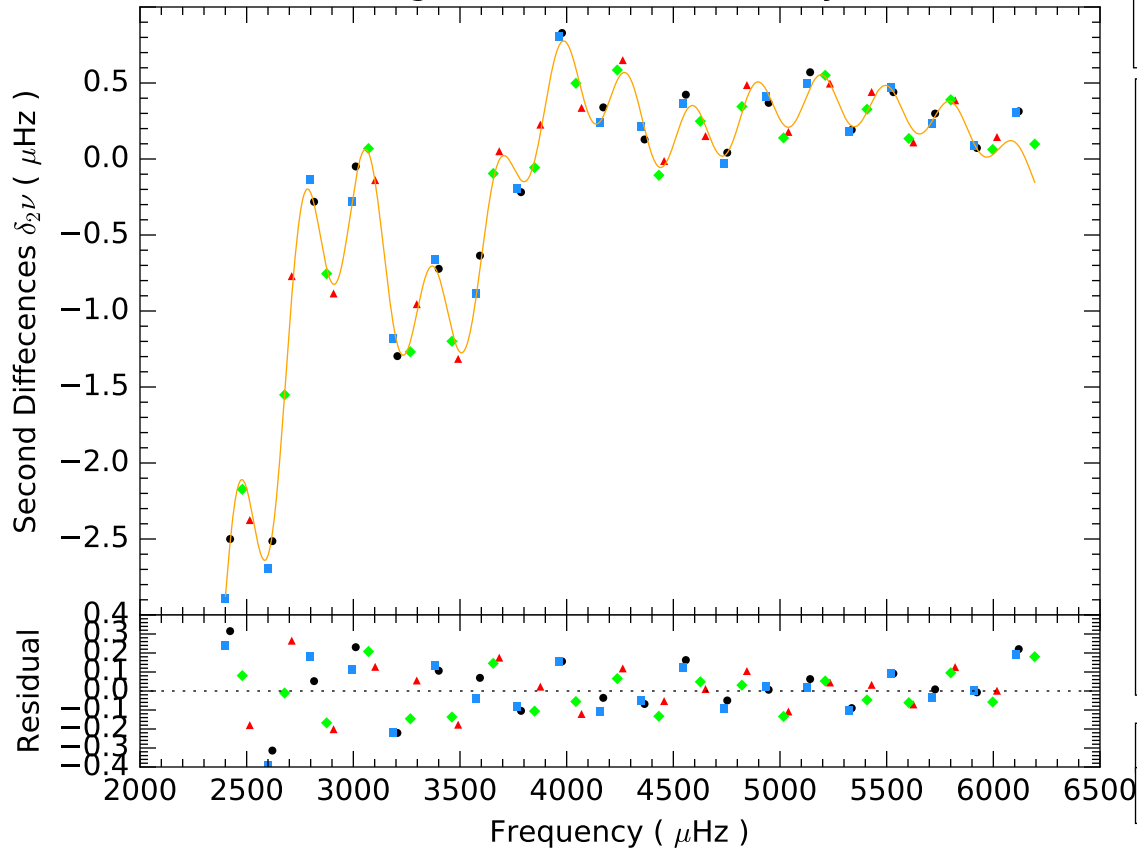
$$\tau_{HI} = 280.04 \text{ s}$$

$$\phi_{HI} = 1.9188e-09$$

profile17

$$\chi^2_\nu(\text{dof} = 65) = 0.033568$$

Age after ZAMS: 1.810 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.6066 \mu\text{Hz}$$

$$a_1 = 0.0036341$$

$$a_2 = -3.6629e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013167$$

$$c_2 = 1.7141e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 458.16 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5318$$

$$b_2 = 4.4225e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1646.8 \text{ s}$$

$$\phi_{\text{CZ}} = 0.88925$$

$$d_0 = 3.4495e-05$$

$$d_2 = 1.6574e-08 \mu\text{Hz}^{-2}$$

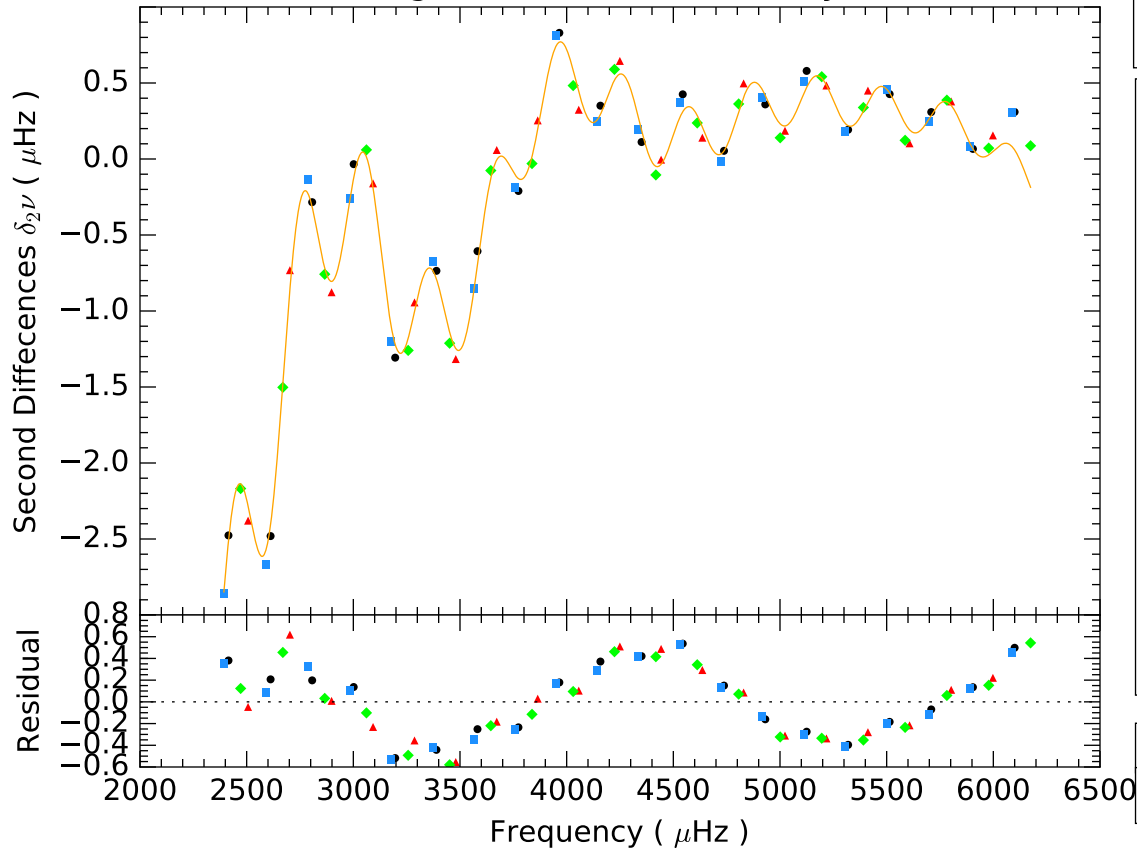
$$\tau_{\text{HI}} = 280.73 \text{ s}$$

$$\phi_{\text{HI}} = 0.0021335$$

profile18

$$\chi^2_\nu(\text{dof} = 65) = 0.022517$$

Age after ZAMS: 2.110 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.758 \mu\text{Hz}$$

$$a_1 = 0.0037237$$

$$a_2 = -3.7814e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012706$$

$$c_2 = 1.6883e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 458.94 \text{ s}$$

$$\phi_{HeII} = 3.5965$$

$$b_2 = 4.2341e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1651.3 \text{ s}$$

$$\phi_{CZ} = 0.97134$$

$$d_0 = 2.3713e-05$$

$$d_2 = 1e-10 \mu\text{Hz}^{-2}$$

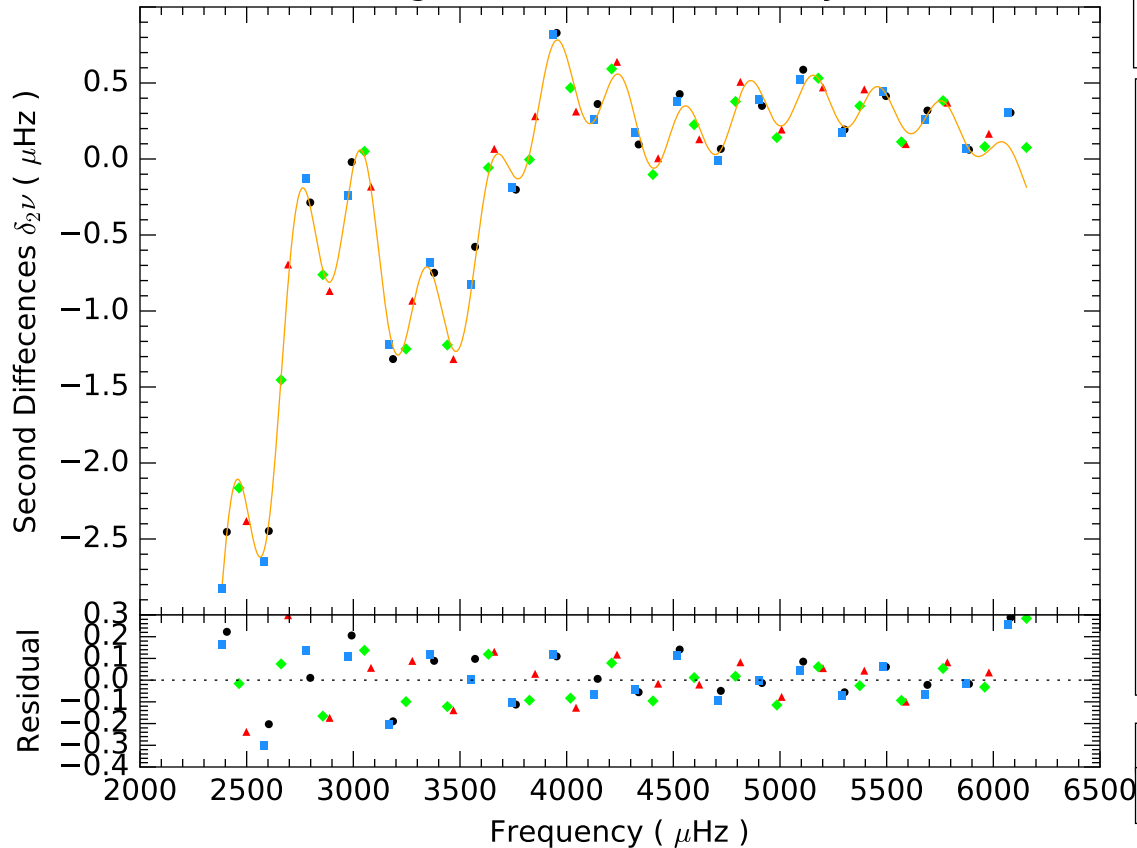
$$\tau_{HI} = 282.02 \text{ s}$$

$$\phi_{HI} = 1e-10$$

profile19

$$\chi^2_\nu(\text{dof} = 65) = 0.12447$$

Age after ZAMS: 2.410 Gyr



$$a_0 = -8.7025 \mu\text{Hz}$$

$$a_1 = 0.0037131$$

$$a_2 = -3.7827e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.001253$$

$$c_2 = 1.6828e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 462.15 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5436$$

$$b_2 = 4.3067e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1656.5 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0039$$

$$d_0 = 2.3775e-05$$

$$d_2 = 5.0848e-10 \mu\text{Hz}^{-2}$$

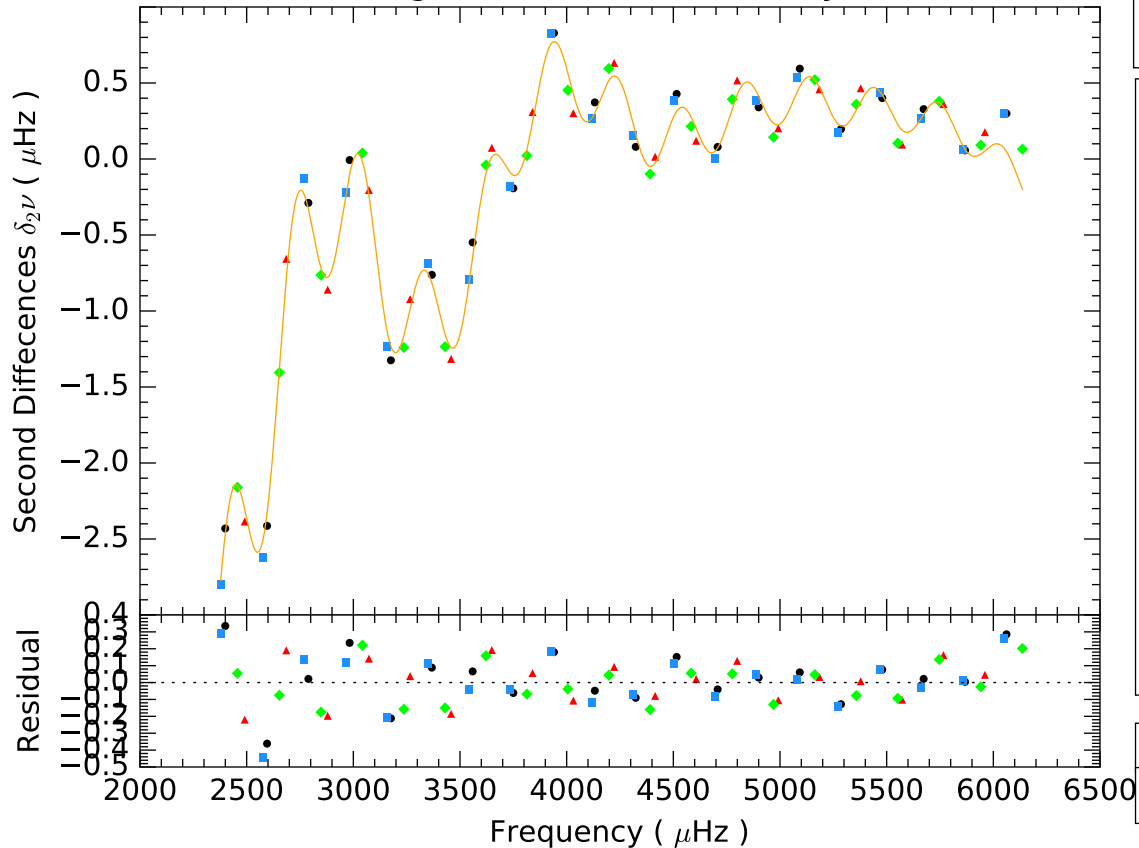
$$\tau_{\text{HI}} = 282.65 \text{ s}$$

$$\phi_{\text{HI}} = 0.00059977$$

profile20

$$\chi^2_\nu(\text{dof} = 65) = 0.018387$$

Age after ZAMS: 2.710 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.7167 \mu\text{Hz}$$

$$a_1 = 0.0037362$$

$$a_2 = -3.8236e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012762$$

$$c_2 = 1.7076e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 463.59 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5673$$

$$b_2 = 4.0557e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1661.1 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0758$$

$$d_0 = 2.4006e-05$$

$$d_2 = 4.6229e-11 \mu\text{Hz}^{-2}$$

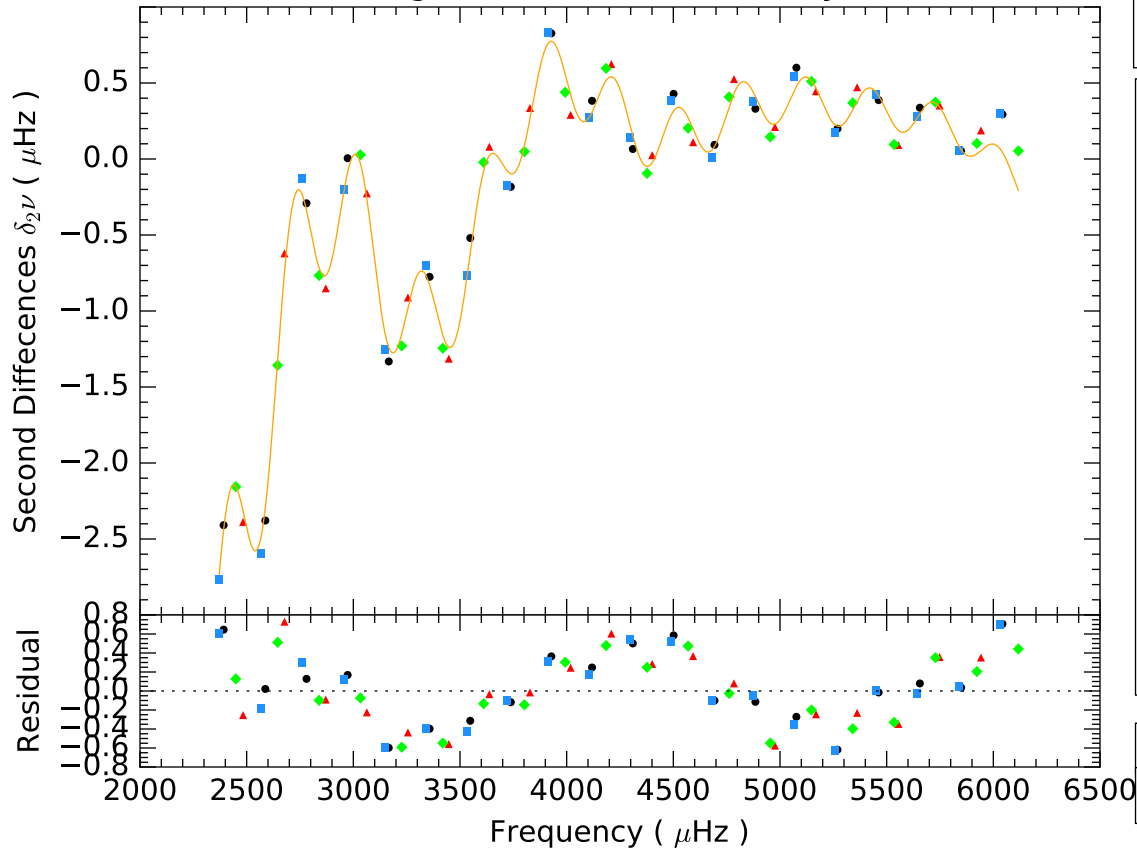
$$\tau_{\text{HI}} = 283.95 \text{ s}$$

$$\phi_{\text{HI}} = 5.6877e-09$$

profile21

$$\chi^2_\nu(\text{dof} = 65) = 0.025905$$

Age after ZAMS: 3.010 Gyr



$$a_0 = -8.6961 \mu\text{Hz}$$

$$a_1 = 0.0037425$$

$$a_2 = -3.845e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0012786$$

$$c_2 = 1.7165e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 465.94 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5521$$

$$b_2 = 3.9895e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1666.0 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1329$$

$$d_0 = 2.4161e-05$$

$$d_2 = 1e-10 \mu\text{Hz}^{-2}$$

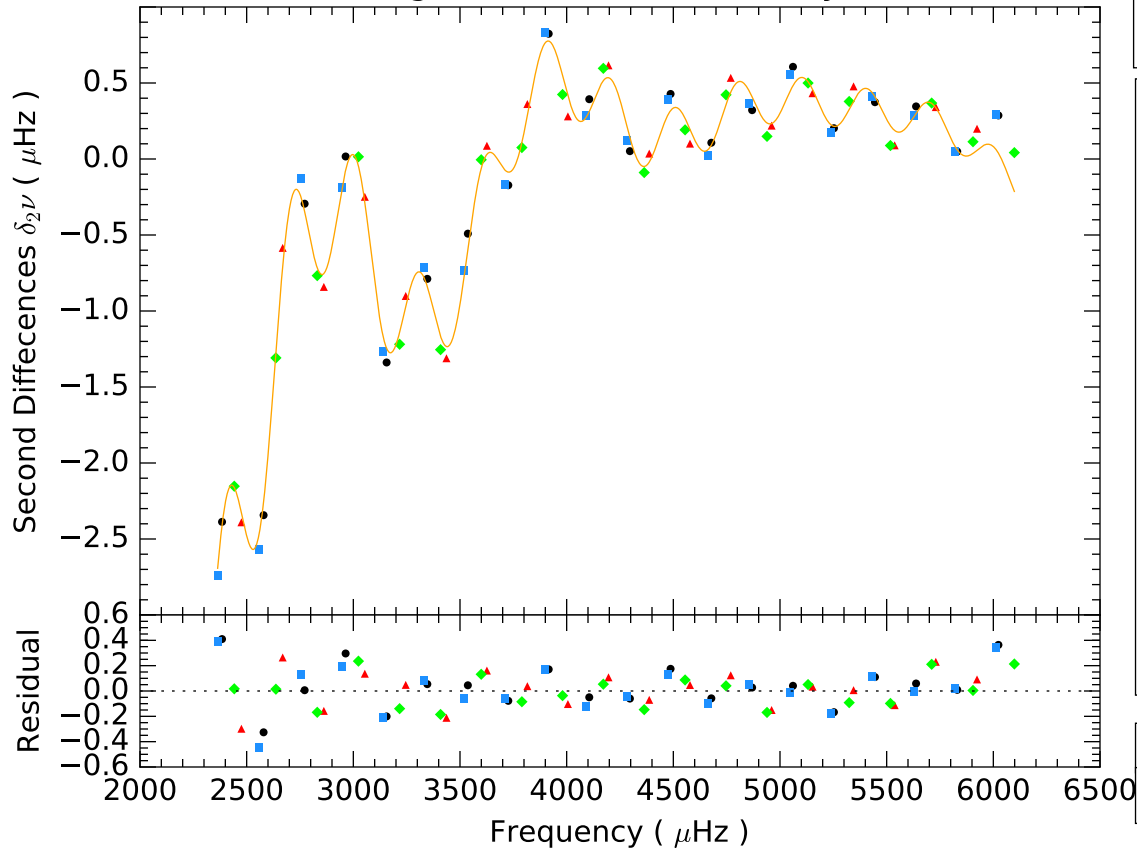
$$\tau_{\text{HI}} = 284.91 \text{ s}$$

$$\phi_{\text{HI}} = 1e-10$$

profile22

$$\chi^2_\nu(\text{dof} = 65) = 0.16875$$

Age after ZAMS: 3.310 Gyr



$$a_0 = -8.6754 \mu\text{Hz}$$

$$a_1 = 0.0037488$$

$$a_2 = -3.8665e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012804$$

$$c_2 = 1.7251e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 468.28 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5381$$

$$b_2 = 3.9233e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1670.9 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1901$$

$$d_0 = 2.4309e-05$$

$$d_2 = 1e-10 \mu\text{Hz}^{-2}$$

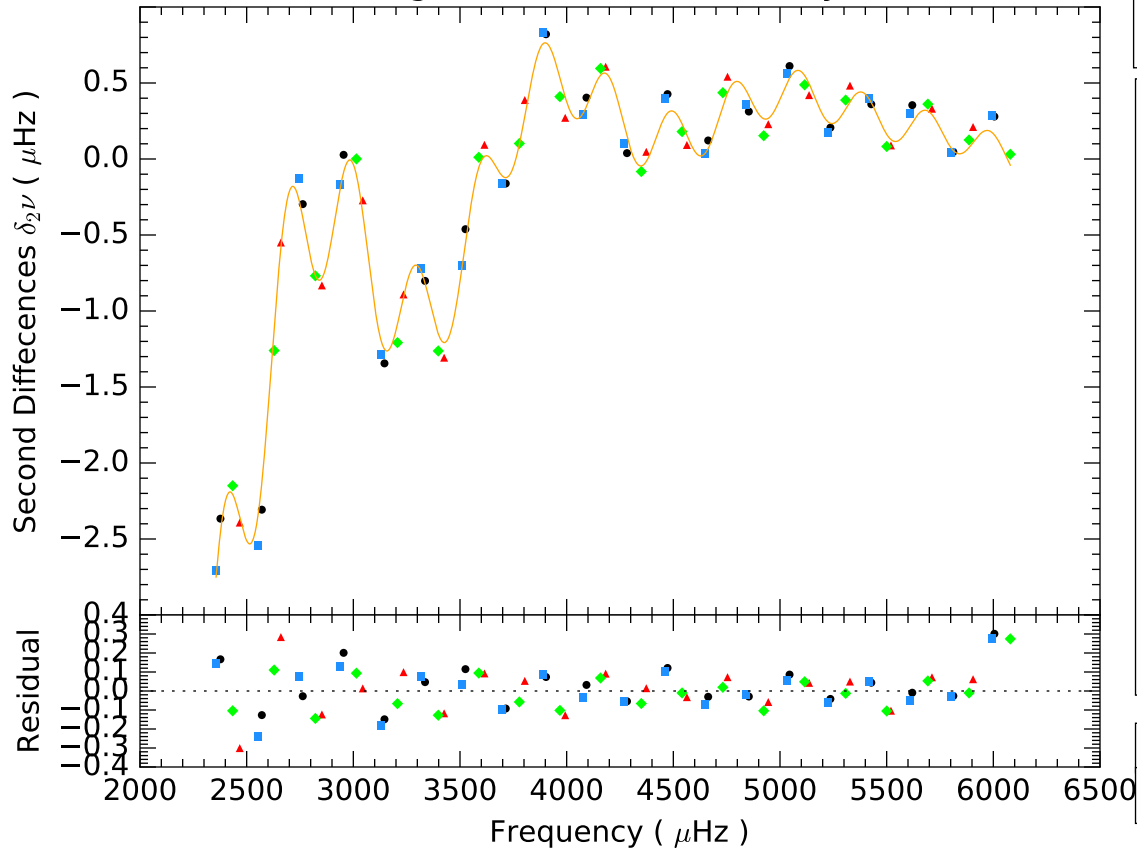
$$\tau_{\text{HI}} = 285.89 \text{ s}$$

$$\phi_{\text{HI}} = 2.8506e-06$$

profile23

$$\chi^2_\nu(\text{dof} = 65) = 0.032555$$

Age after ZAMS: 3.610 Gyr



$$a_0 = -9.2706 \mu\text{Hz}$$

$$a_1 = 0.0039859$$

$$a_2 = -4.0804e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0011922$$

$$c_2 = 1.6214e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 444.09 \text{ s}$$

$$\phi_{\text{HeII}} = 4.6447$$

$$b_2 = 3.9168e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1673.3 \text{ s}$$

$$\phi_{\text{CZ}} = 1.4037$$

$$d_0 = 3.6466e-05$$

$$d_2 = 1.6657e-08 \mu\text{Hz}^{-2}$$

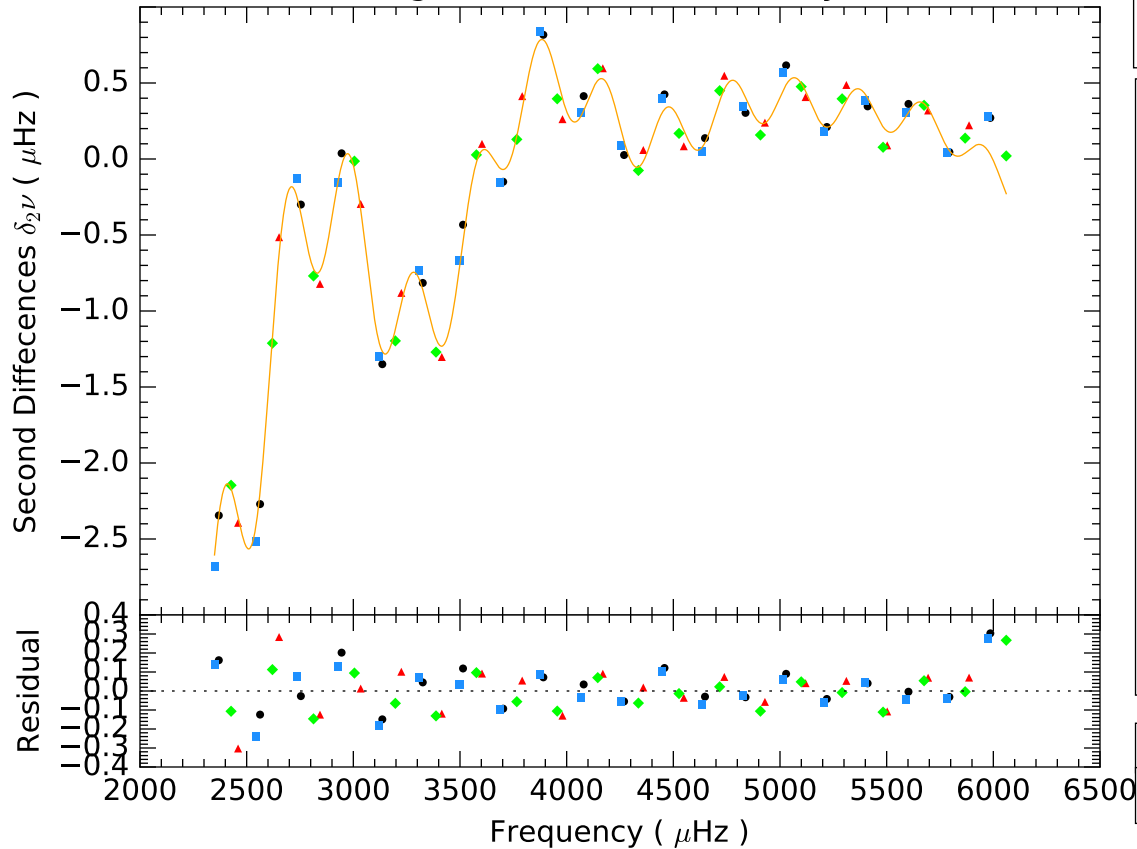
$$\tau_{\text{HI}} = 179.61 \text{ s}$$

$$\phi_{\text{HI}} = 0.00079774$$

profile24

$$\chi^2_\nu(\text{dof} = 65) = 0.015565$$

Age after ZAMS: 3.910 Gyr



$$a_0 = -8.6354 \mu\text{Hz}$$

$$a_1 = 0.0037624$$

$$a_2 = -3.9114e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012872$$

$$c_2 = 1.7443e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 473.1 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5074$$

$$b_2 = 3.8852e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1680.4 \text{ s}$$

$$\phi_{\text{CZ}} = 1.3267$$

$$d_0 = 2.4634e-05$$

$$d_2 = 1e-10 \mu\text{Hz}^{-2}$$

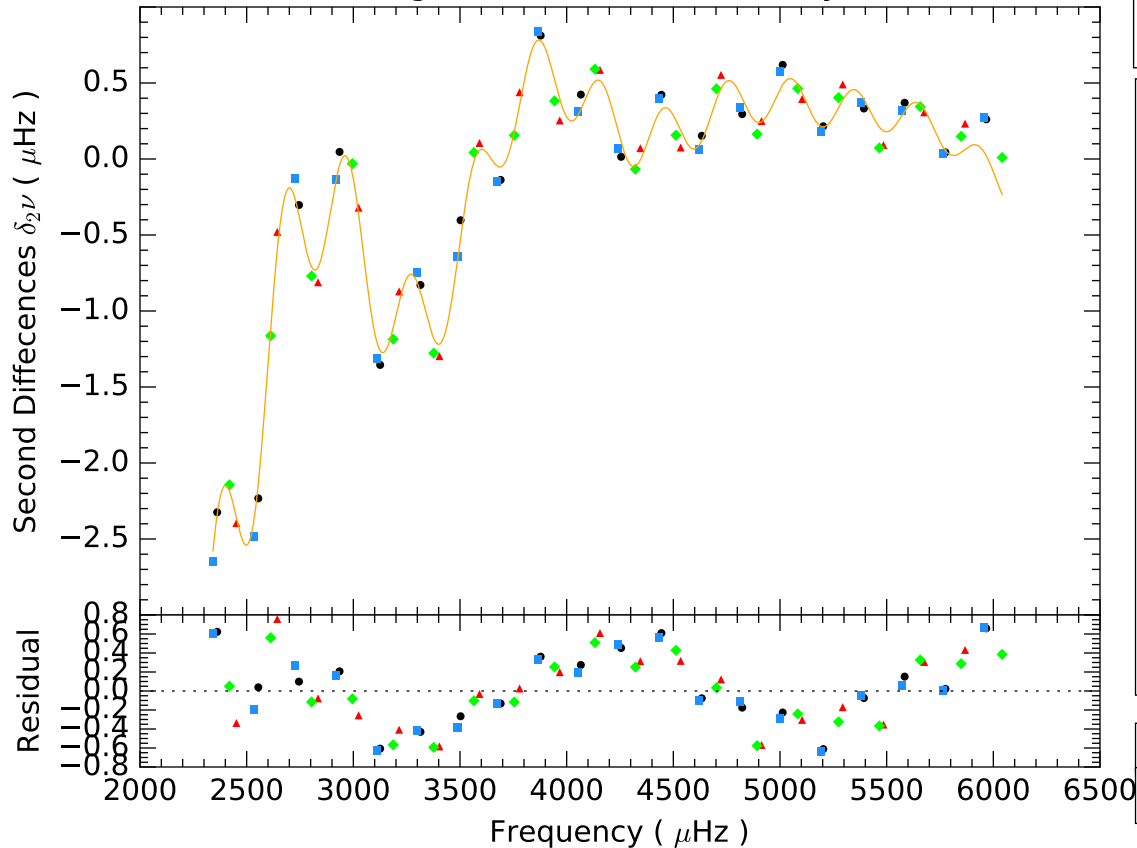
$$\tau_{\text{HI}} = 287.89 \text{ s}$$

$$\phi_{\text{HI}} = 1e-10$$

profile25

$$\chi^2_\nu(\text{dof} = 65) = 0.015733$$

Age after ZAMS: 4.210 Gyr



$$a_0 = -8.6107 \mu \text{ Hz}$$

$$a_1 = 0.0037672$$

$$a_2 = -3.932e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0012825$$

$$c_2 = 1.749e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 475.41 \text{ s}$$

$$\phi_{\text{HeII}} = 3.4973$$

$$b_2 = 3.7297e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1685.8 \text{ s}$$

$$\phi_{\text{CZ}} = 1.3684$$

$$d_0 = 2.4766e-05$$

$$d_2 = 1.5867e-13 \mu\text{Hz}^{-2}$$

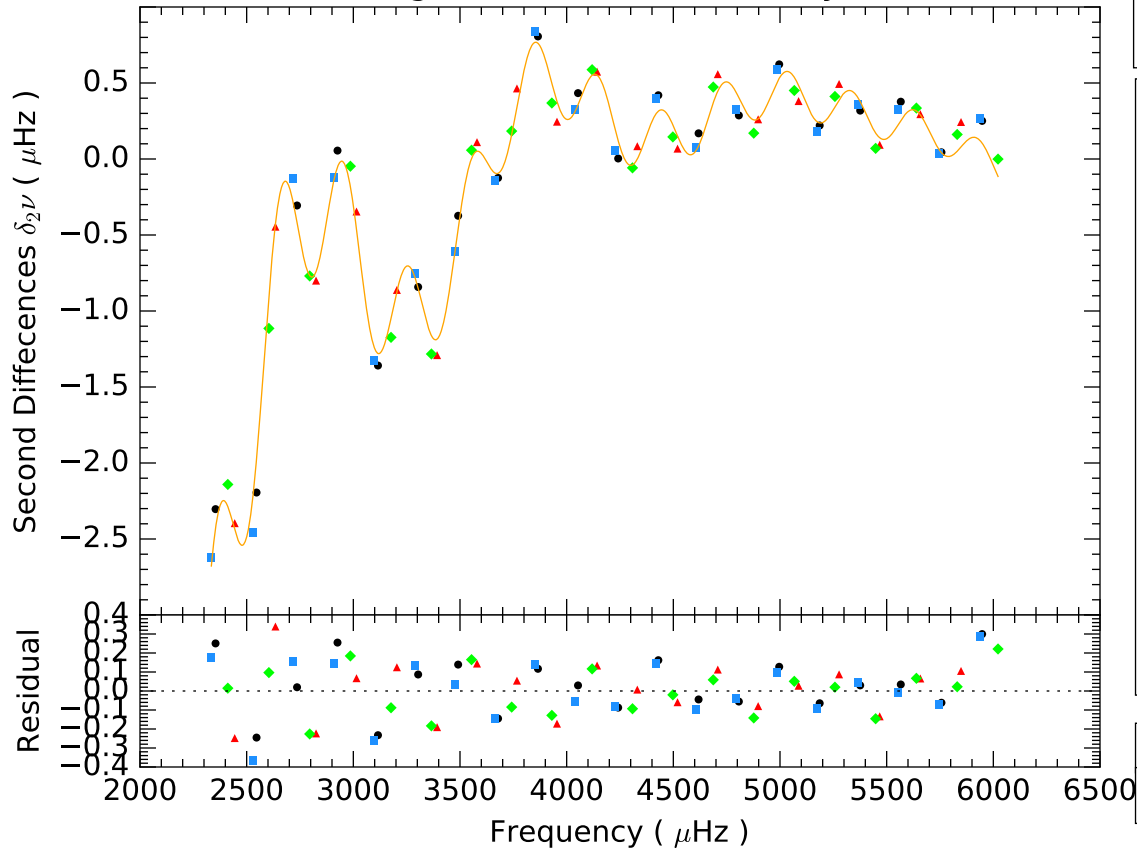
$$\tau_{\text{HI}} = 288.87 \text{ s}$$

$$\phi_{\text{HI}} = 1.8291e-12$$

profile26

$$\chi^2_\nu(\text{dof} = 65) = 0.16916$$

Age after ZAMS: 4.510 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -9.8573 \mu \text{ Hz}$$

$$a_1 = 0.0043441$$

$$a_2 = -4.5658e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013301$$

$$c_2 = 1.7395e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 446.02 \text{ s}$$

$$\phi_{\text{HeII}} = 4.8159$$

$$b_2 = 3.811e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1684.9 \text{ s}$$

$$\phi_{\text{CZ}} = 1.752$$

$$d_0 = 2.9175e-05$$

$$d_2 = 1.3549e-10 \mu\text{Hz}^{-2}$$

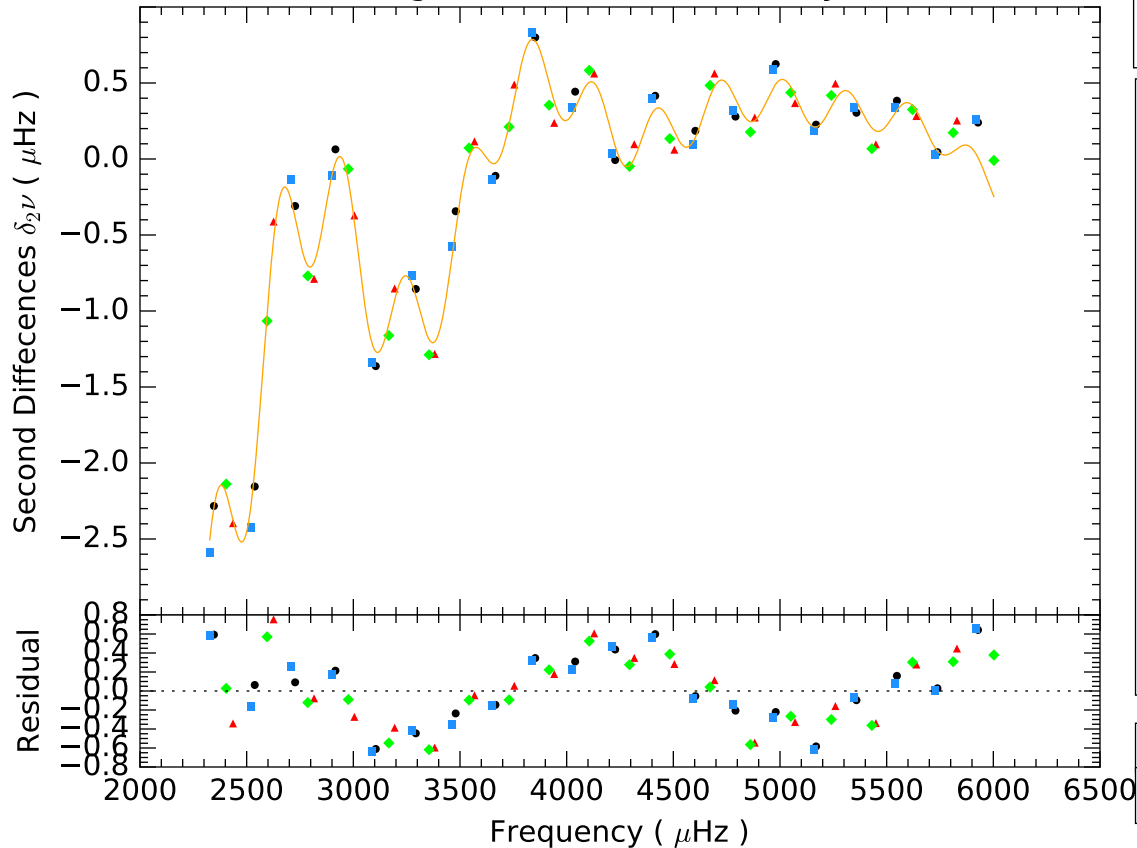
$$\tau_{\text{HI}} = 187.32 \text{ s}$$

$$\phi_{\text{HI}} = 0.00041431$$

profile27

$$\chi^2_\nu(\text{dof} = 65) = 0.025754$$

Age after ZAMS: 4.810 Gyr



$$a_0 = -8.5625 \mu\text{Hz}$$

$$a_1 = 0.0037779$$

$$a_2 = -3.975e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0012802$$

$$c_2 = 1.7629e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 480.25 \text{ s}$$

$$\phi_{\text{HeII}} = 3.4723$$

$$b_2 = 3.6022e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1696.1 \text{ s}$$

$$\phi_{\text{CZ}} = 1.4905$$

$$d_0 = 2.5203e-05$$

$$d_2 = 1.9491e-10 \mu\text{Hz}^{-2}$$

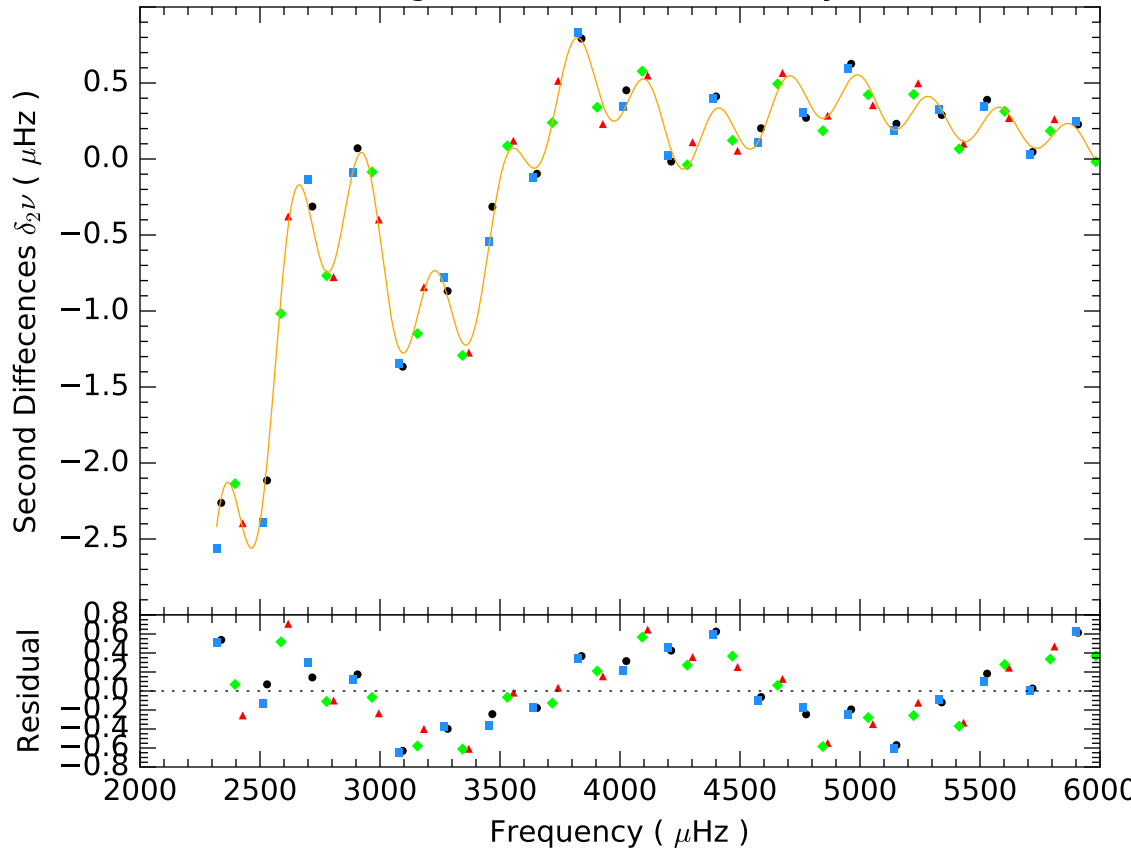
$$\tau_{\text{HI}} = 290.92 \text{ s}$$

$$\phi_{\text{HI}} = 0.00032076$$

profile28

$$\chi^2_\nu(\text{dof} = 65) = 0.16545$$

Age after ZAMS: 5.110 Gyr



$$a_0 = -7.2571 \mu\text{Hz}$$

$$a_1 = 0.0031243$$

$$a_2 = -3.1889e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013495$$

$$c_2 = 1.7717e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 471.51 \text{ s}$$

$$\phi_{HeII} = 3.8864$$

$$b_2 = 3.7719e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1700.4 \text{ s}$$

$$\phi_{CZ} = 1.6573$$

$$d_0 = 0.00014991$$

$$d_2 = 9.9348e-08 \mu\text{Hz}^{-2}$$

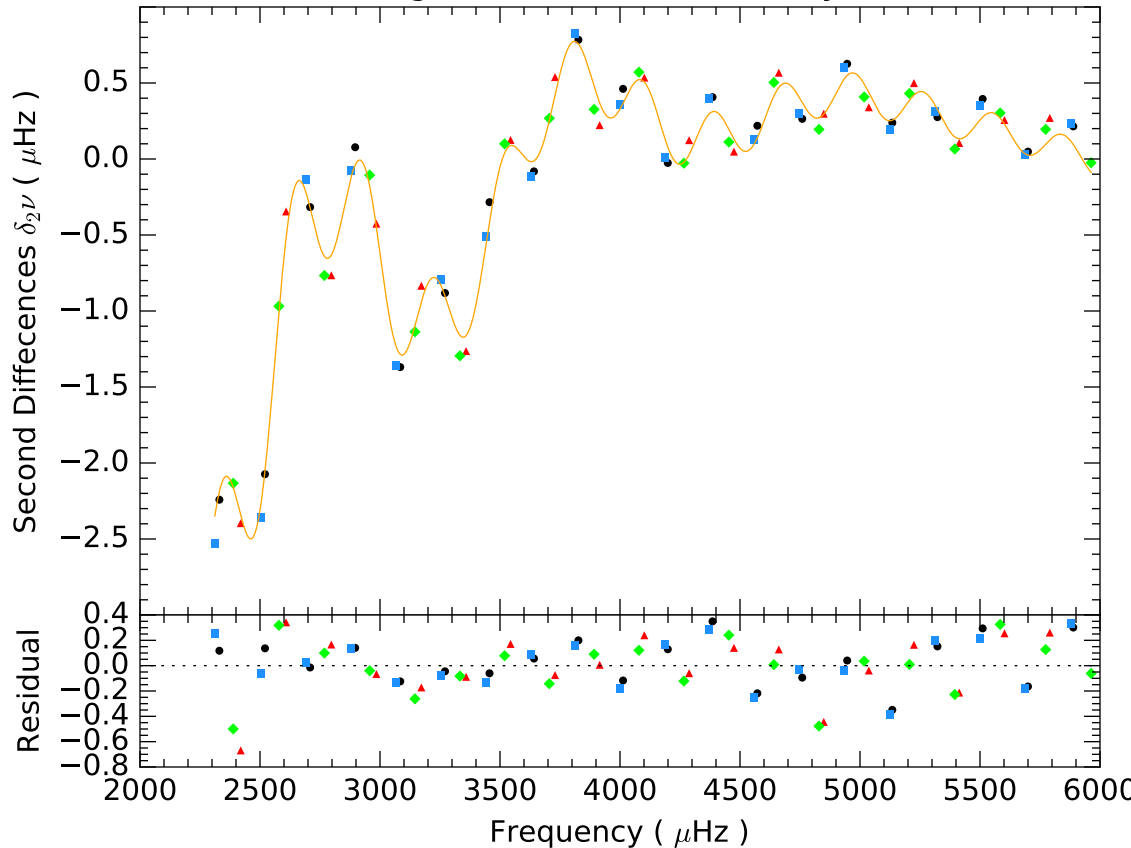
$$\tau_{HI} = 209.75 \text{ s}$$

$$\phi_{HI} = 3.9766$$

profile29

$$\chi^2_\nu(\text{dof} = 65) = 0.16241$$

Age after ZAMS: 5.410 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -6.2655 \mu\text{Hz}$$

$$a_1 = 0.0027614$$

$$a_2 = -2.8725e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.00301$$

$$c_2 = 2.1993e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 436.96 \text{ s}$$

$$\phi_{HeII} = 5.4728$$

$$b_2 = 3.4343e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1715.9 \text{ s}$$

$$\phi_{CZ} = 1.1762$$

$$d_0 = 0.018986$$

$$d_2 = 5.2423e-07 \mu\text{Hz}^{-2}$$

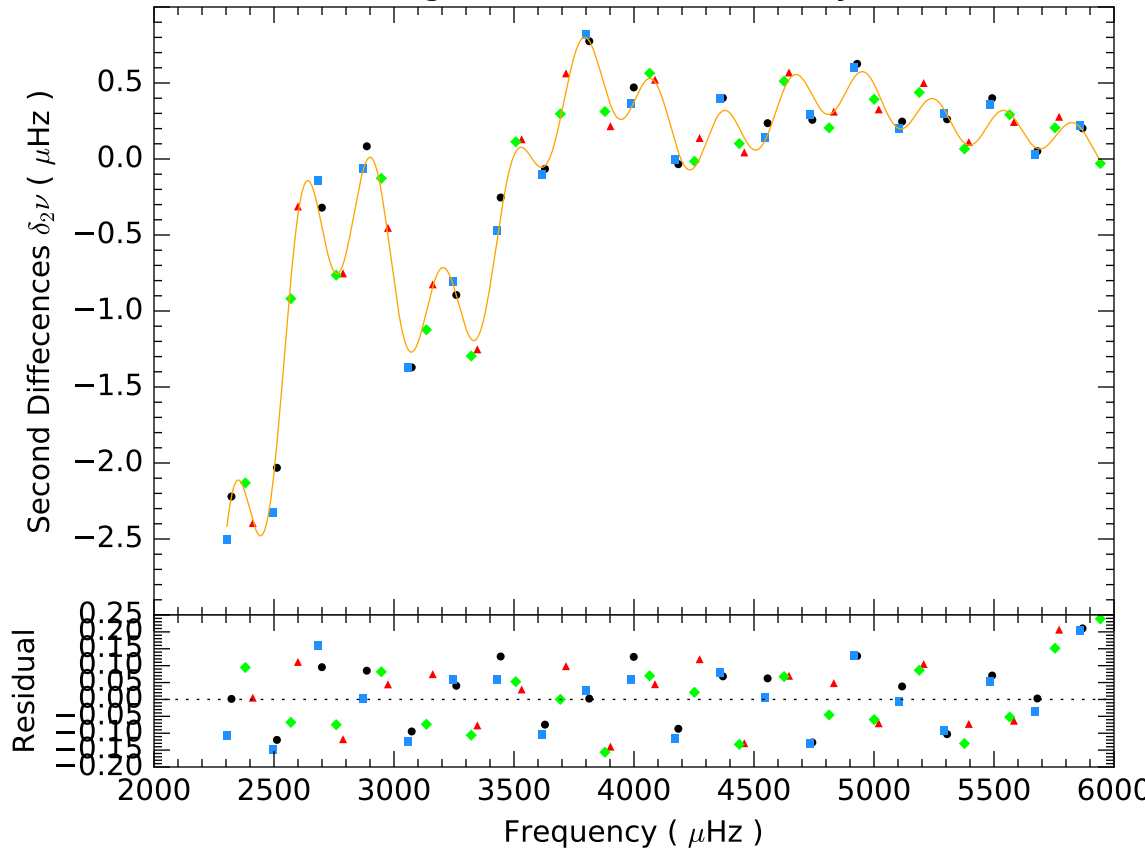
$$\tau_{HI} = 327.67 \text{ s}$$

$$\phi_{HI} = 6.1955$$

profile30

$$\chi^2_\nu(\text{dof} = 65) = 0.054798$$

Age after ZAMS: 5.710 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.6935 \mu\text{Hz}$$

$$a_1 = 0.0038265$$

$$a_2 = -3.9977e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0011385$$

$$c_2 = 1.6364e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 466.45 \text{ s}$$

$$\phi_{\text{HeII}} = 4.3013$$

$$b_2 = 3.6746e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1712.2 \text{ s}$$

$$\phi_{\text{CZ}} = 1.7042$$

$$d_0 = 2.6395e-05$$

$$d_2 = 1.9135e-09 \mu\text{Hz}^{-2}$$

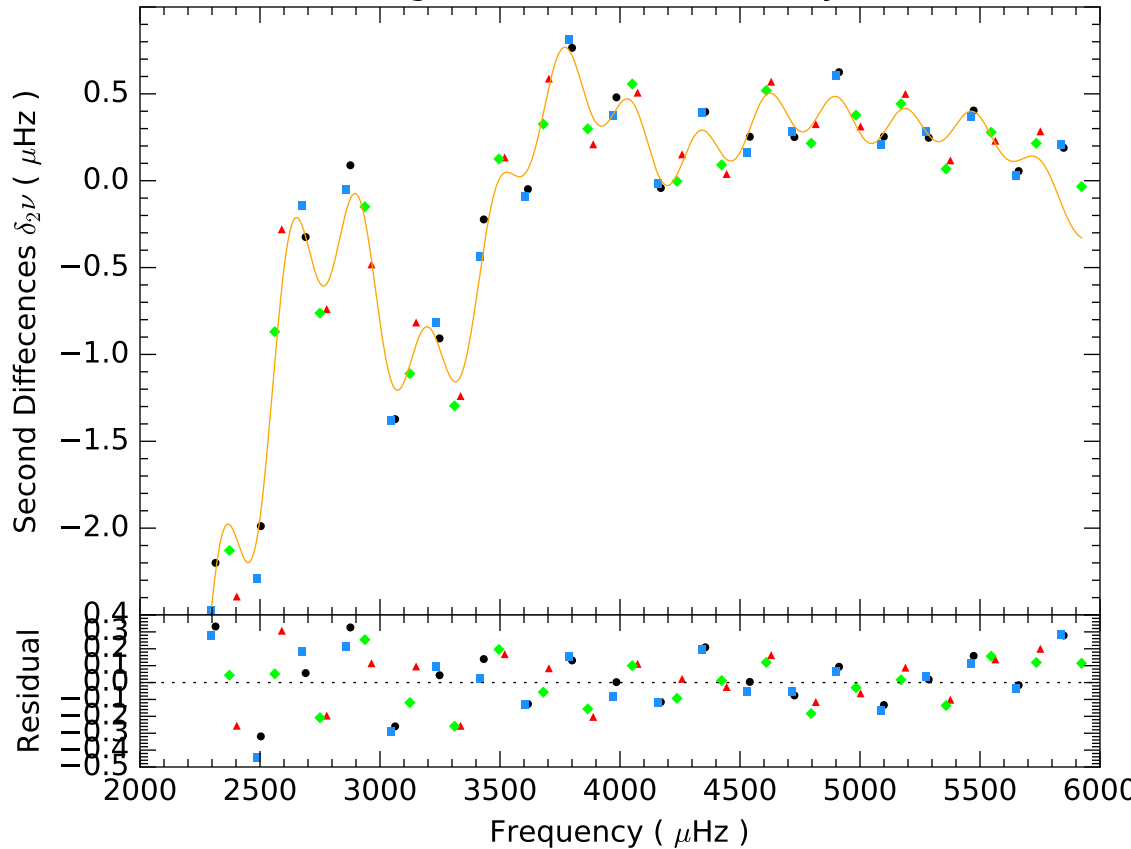
$$\tau_{\text{HI}} = 180.26 \text{ s}$$

$$\phi_{\text{HI}} = 0.00047302$$

profile31

$$\chi^2_\nu(\text{dof} = 65) = 0.012024$$

Age after ZAMS: 6.010 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -8.2897 \mu\text{Hz}$$

$$a_1 = 0.0037233$$

$$a_2 = -3.9843e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.00096749$$

$$c_2 = 1.57e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 501.71 \text{ s}$$

$$\phi_{\text{HeII}} = 2.9699$$

$$b_2 = 2.7871e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1759.3 \text{ s}$$

$$\phi_{\text{CZ}} = 6.2832$$

$$d_0 = 3.0026e-05$$

$$d_2 = 3.5609e-10 \mu\text{Hz}^{-2}$$

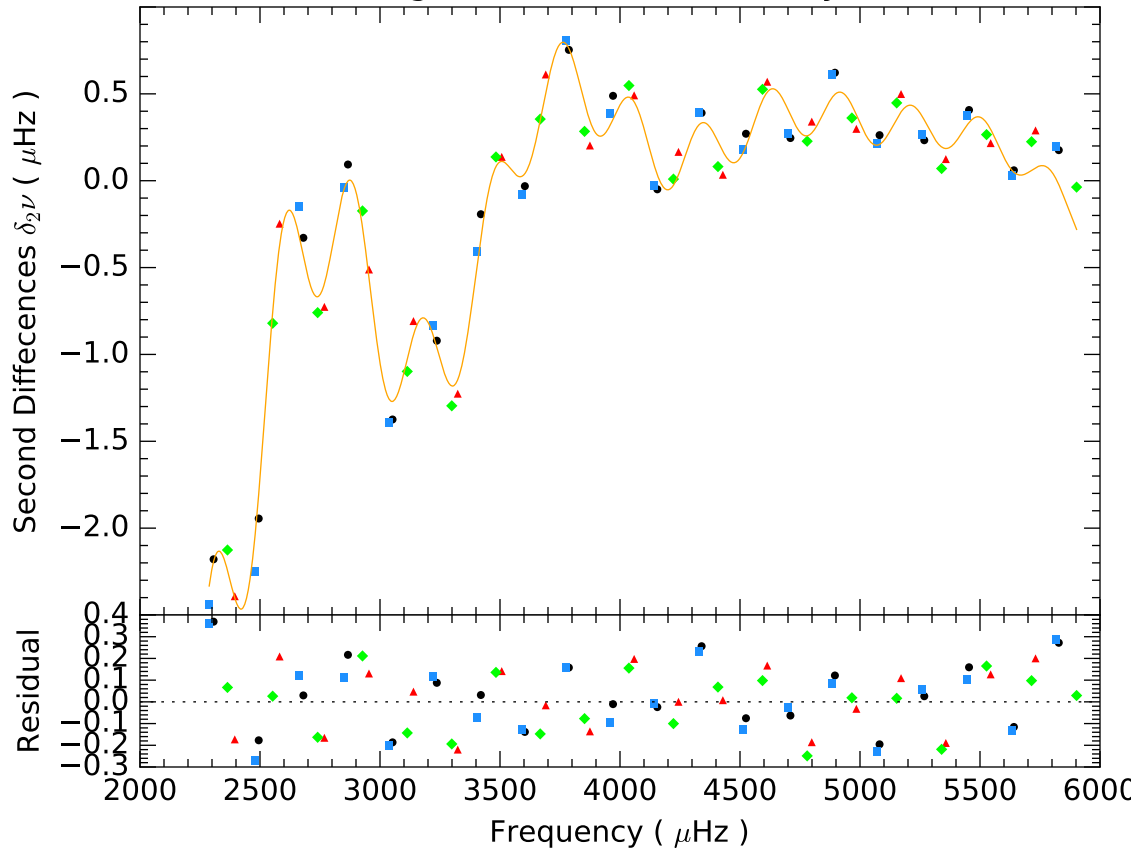
$$\tau_{\text{HI}} = 322.35 \text{ s}$$

$$\phi_{\text{HI}} = 4.6263$$

profile32

$$\chi^2_\nu(\text{dof} = 65) = 0.033945$$

Age after ZAMS: 6.310 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -8.4374 \mu\text{Hz}$$

$$a_1 = 0.0038057$$

$$a_2 = -4.0899e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012589$$

$$c_2 = 1.7895e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 492.53 \text{ s}$$

$$\phi_{\text{HeII}} = 3.4294$$

$$b_2 = 3.3034e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1723.2 \text{ s}$$

$$\phi_{\text{CZ}} = 1.8224$$

$$d_0 = 2.5864e-05$$

$$d_2 = 1.6298e-13 \mu\text{Hz}^{-2}$$

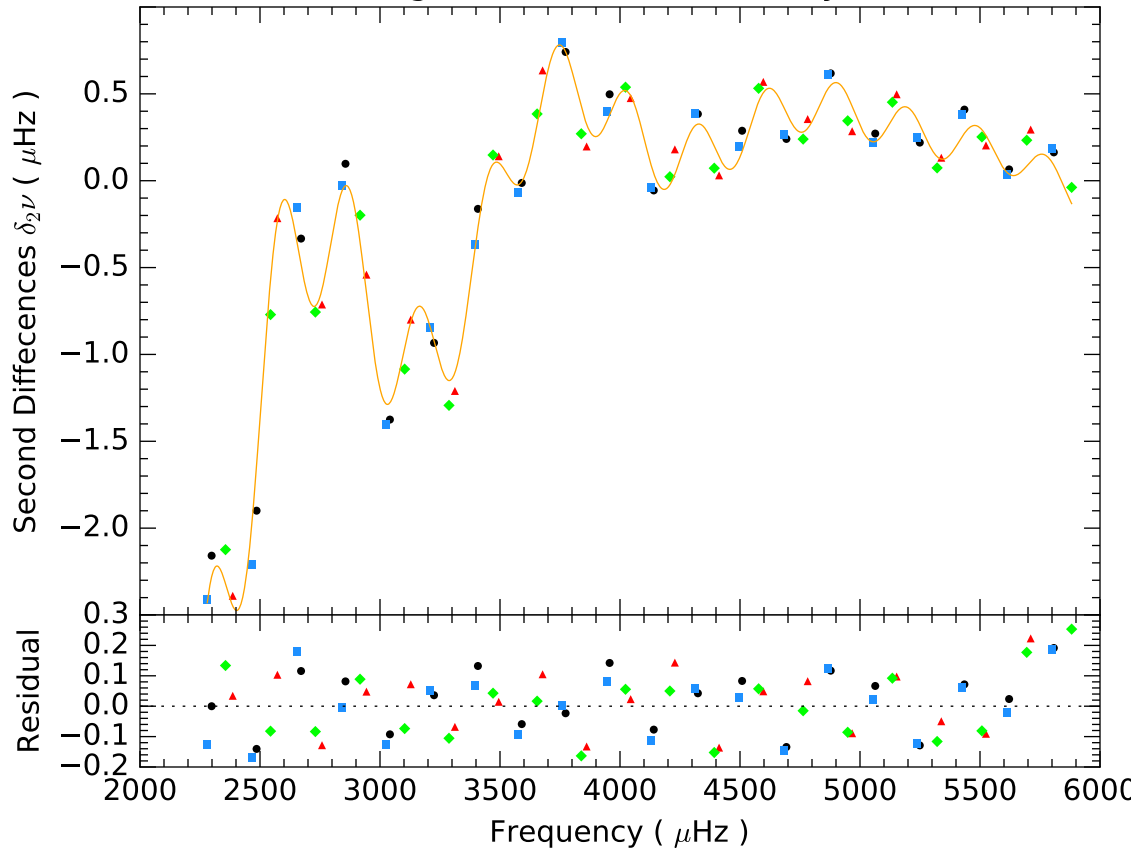
$$\tau_{\text{HI}} = 296.31 \text{ s}$$

$$\phi_{\text{HI}} = 2.5384e-12$$

profile33

$$\chi^2_\nu(\text{dof} = 65) = 0.029589$$

Age after ZAMS: 6.610 Gyr



$$a_0 = -9.4561 \mu\text{Hz}$$

$$a_1 = 0.0042771$$

$$a_2 = -4.6049e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013726$$

$$c_2 = 1.8413e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 464.01 \text{ s}$$

$$\phi_{HeII} = 4.685$$

$$b_2 = 3.463e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1723.8 \text{ s}$$

$$\phi_{CZ} = 2.1421$$

$$d_0 = 3.1529e-05$$

$$d_2 = 5.3599e-09 \mu\text{Hz}^{-2}$$

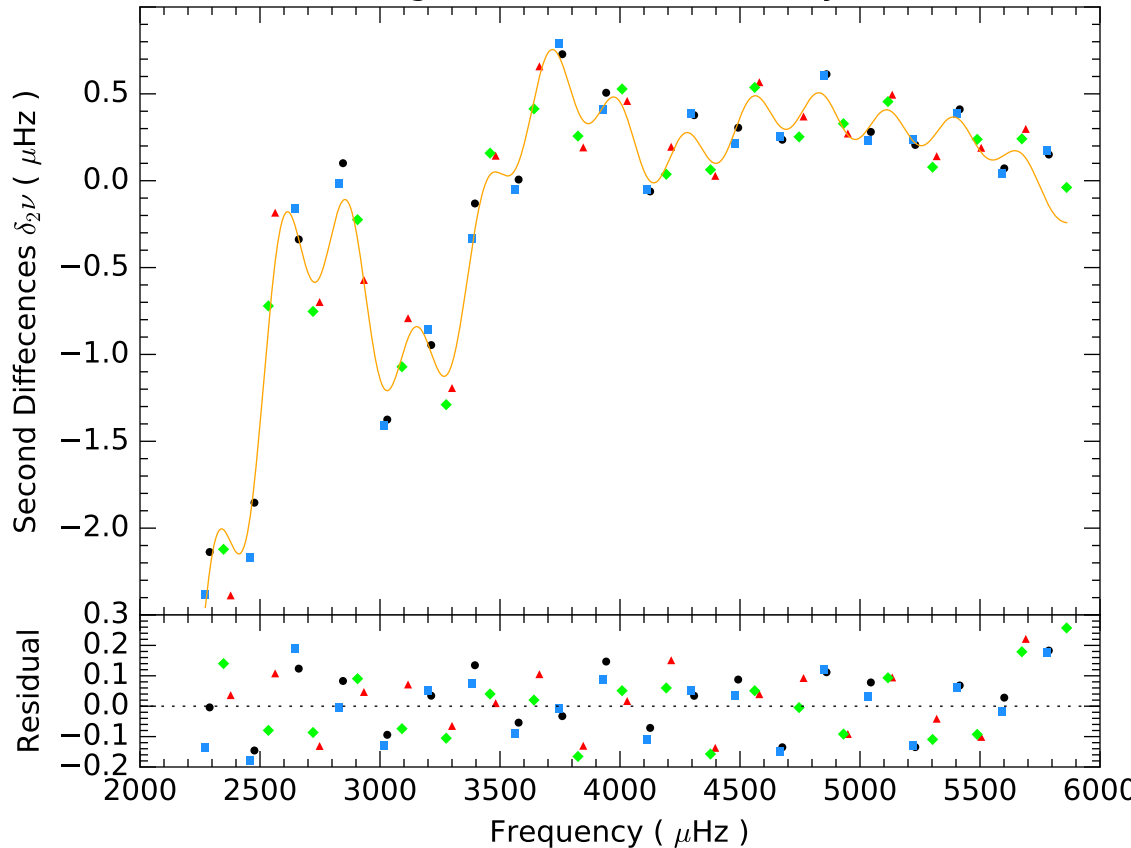
$$\tau_{HI} = 190.35 \text{ s}$$

$$\phi_{HI} = 0.00039863$$

profile34

$$\chi^2_\nu(\text{dof} = 65) = 0.013387$$

Age after ZAMS: 6.910 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -8.3127 \mu\text{Hz}$$

$$a_1 = 0.0037826$$

$$a_2 = -4.0982e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0011337$$

$$c_2 = 1.7219e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 494.75 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5285$$

$$b_2 = 2.6085e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1784.1 \text{ s}$$

$$\phi_{\text{CZ}} = 6.2832$$

$$d_0 = 2.5491e-05$$

$$d_2 = 2.4315e-13 \mu\text{Hz}^{-2}$$

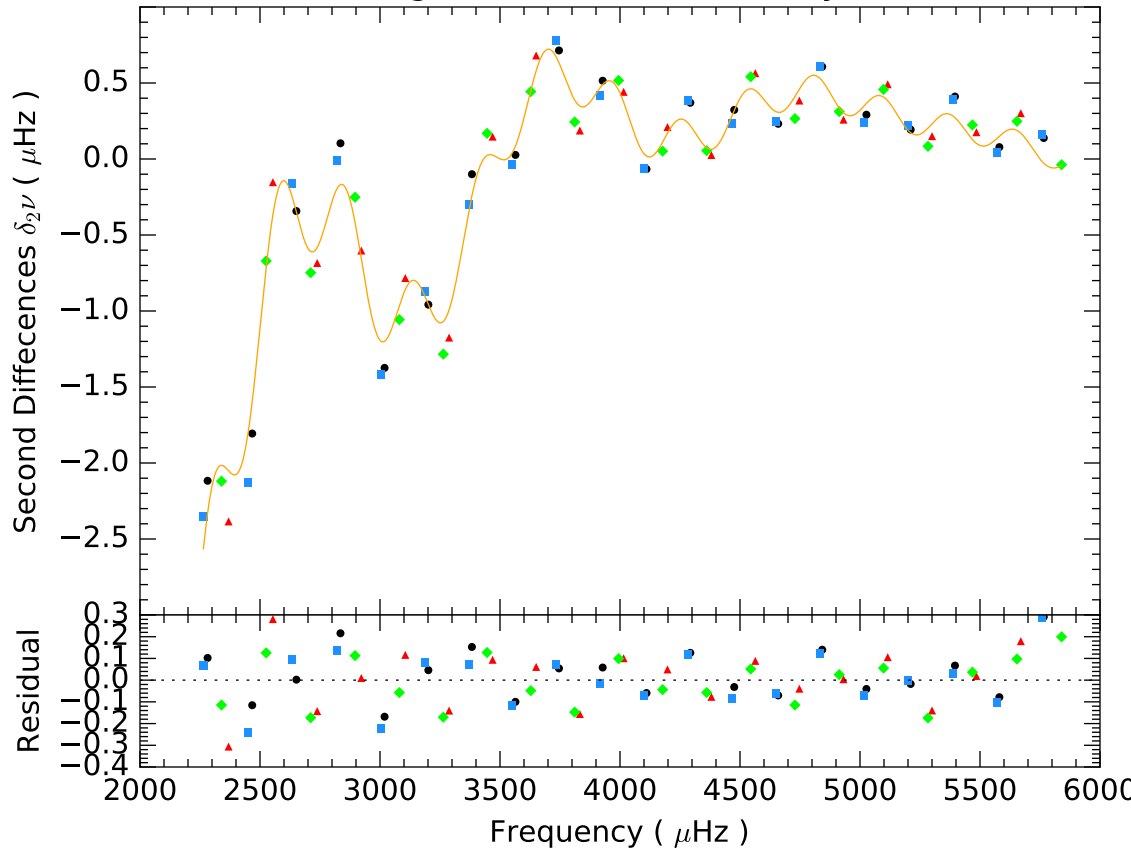
$$\tau_{\text{HI}} = 298.12 \text{ s}$$

$$\phi_{\text{HI}} = 1.4559e-12$$

profile35

$$\chi^2_\nu(\text{dof} = 65) = 0.013757$$

Age after ZAMS: 7.210 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.5773 \mu\text{Hz}$$

$$a_1 = 0.0038487$$

$$a_2 = -4.1016e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012698$$

$$c_2 = 1.7939e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 465.74 \text{ s}$$

$$\phi_{HeII} = 4.7904$$

$$b_2 = 2.5516e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1793.0 \text{ s}$$

$$\phi_{CZ} = 6.2831$$

$$d_0 = 7.0273e-05$$

$$d_2 = 5.1827e-08 \mu\text{Hz}^{-2}$$

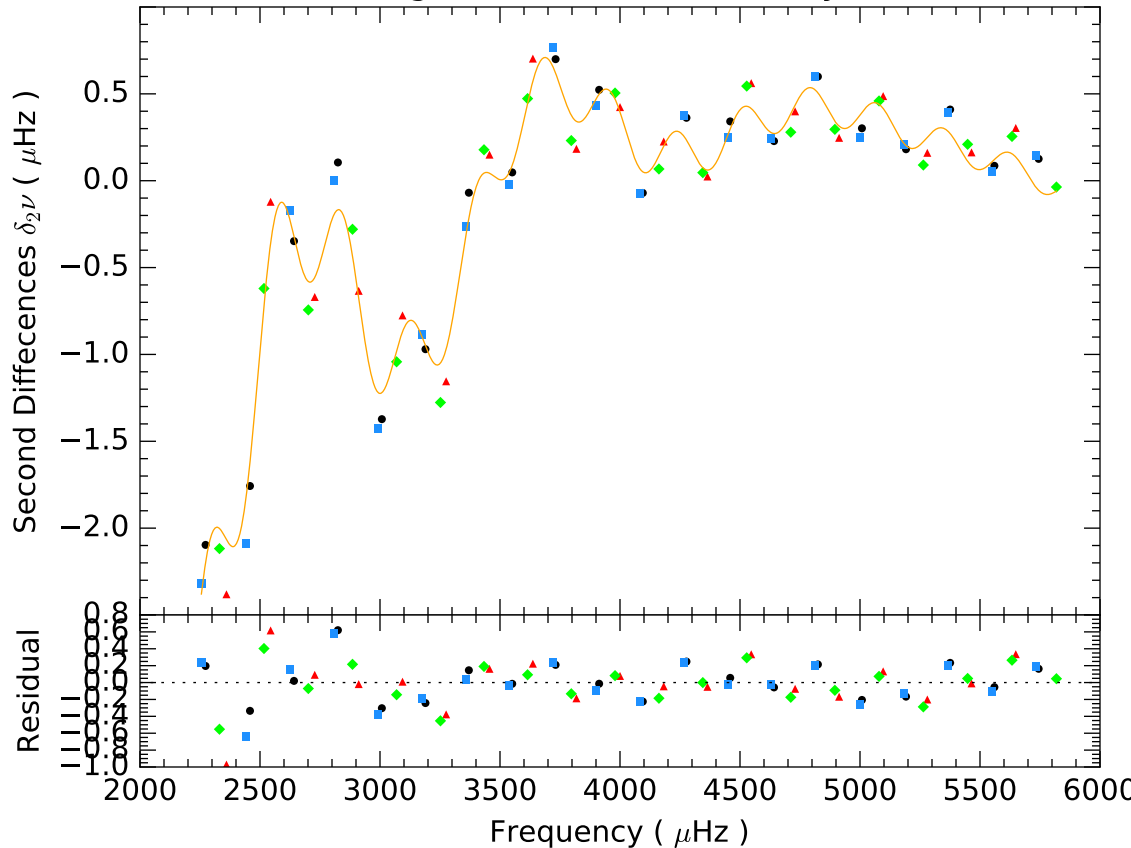
$$\tau_{HI} = 183.4 \text{ s}$$

$$\phi_{HI} = 0.00081497$$

profile36

$$\chi^2_\nu(\text{dof} = 65) = 0.018671$$

Age after ZAMS: 7.510 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -6.2209 \mu \text{ Hz}$$

$$a_1 = 0.0028321$$

$$a_2 = -3.0403e-07 \mu \text{ Hz}^{-2}$$

$$c_0 = 0.0029978$$

$$c_2 = 2.3104e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{HeII} = 432.66 \text{ s}$$

$$\phi_{HeII} = 1.1117e-10$$

$$b_2 = 2.5263e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1799.9 \text{ s}$$

$$\phi_{CZ} = 6.2832$$

$$d_0 = 0.017061$$

$$d_2 = 5.3792e-07 \mu \text{ Hz}^{-2}$$

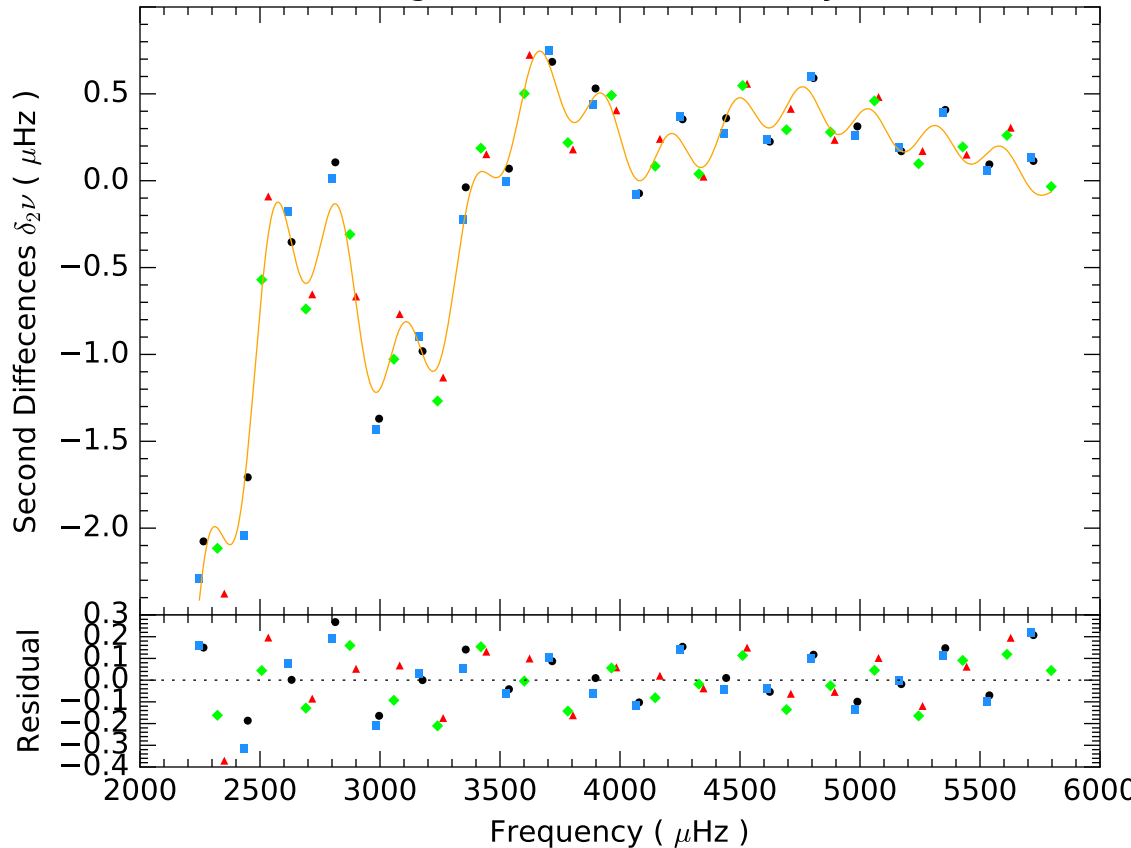
$$\tau_{HI} = 342.81 \text{ s}$$

$$\phi_{HI} = 2.5984e-11$$

profile37

$$\chi^2_\nu(\text{dof} = 65) = 0.084695$$

Age after ZAMS: 7.810 Gyr



- $\ell=0$
- ♦ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -7.8866 \mu\text{Hz}$$

$$a_1 = 0.0035908$$

$$a_2 = -3.8811e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013579$$

$$c_2 = 1.8908e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 482.05 \text{ s}$$

$$\phi_{HeII} = 4.3065$$

$$b_2 = 2.5753e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1810.1 \text{ s}$$

$$\phi_{CZ} = 6.2831$$

$$d_0 = 7.9134e-05$$

$$d_2 = 7.0187e-08 \mu\text{Hz}^{-2}$$

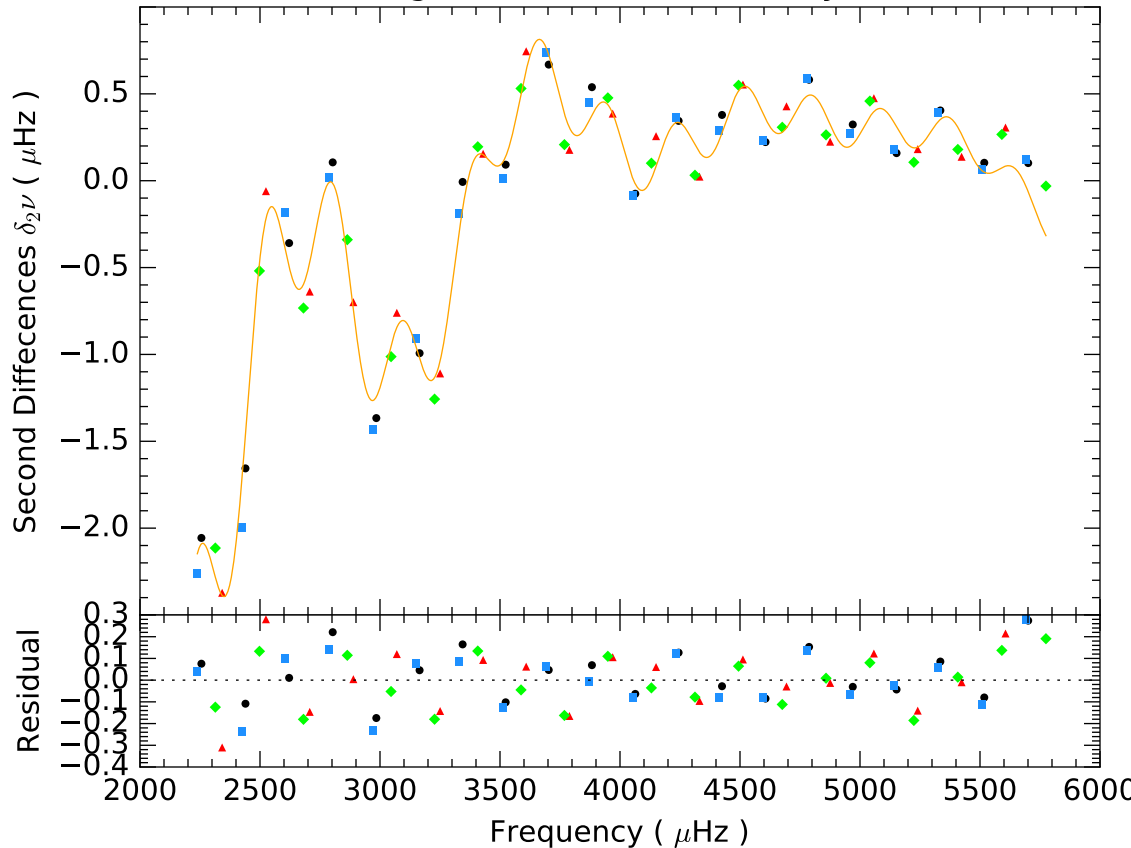
$$\tau_{HI} = 237.59 \text{ s}$$

$$\phi_{HI} = 3.4101$$

profile38

$$\chi^2_\nu(\text{dof} = 65) = 0.020331$$

Age after ZAMS: 8.110 Gyr



$$a_0 = -8.2483 \mu\text{Hz}$$

$$a_1 = 0.0038295$$

$$a_2 = -4.2305e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012035$$

$$c_2 = 1.8043e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 507.96 \text{ s}$$

$$\phi_{\text{HeII}} = 3.4098$$

$$b_2 = 2.9929e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1758.9 \text{ s}$$

$$\phi_{\text{CZ}} = 2.2764$$

$$d_0 = 2.7081e-05$$

$$d_2 = 4.7559e-11 \mu\text{Hz}^{-2}$$

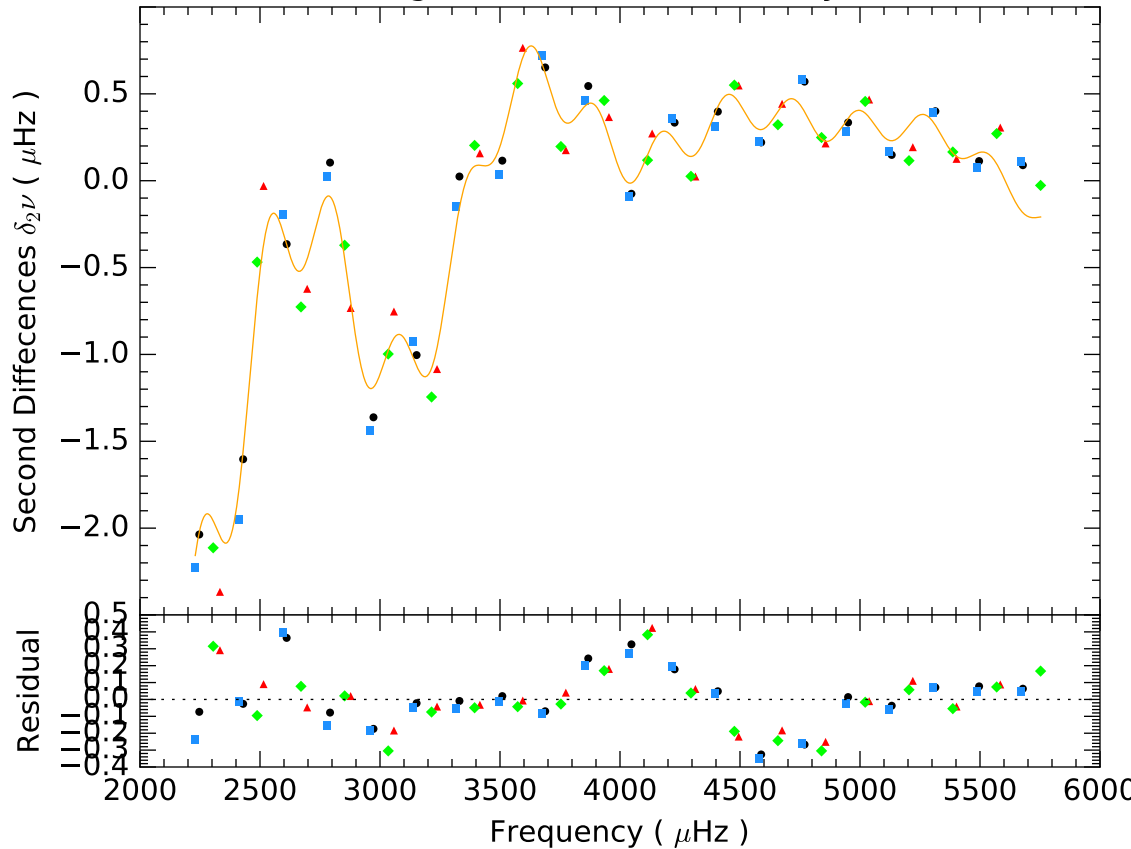
$$\tau_{\text{HI}} = 303.34 \text{ s}$$

$$\phi_{\text{HI}} = 6.838e-11$$

profile39

$$\chi^2_\nu(\text{dof} = 65) = 0.019886$$

Age after ZAMS: 8.410 Gyr



- $\ell=0$
- ♦ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -7.7034 \mu\text{Hz}$$

$$a_1 = 0.0035786$$

$$a_2 = -3.9472e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0010946$$

$$c_2 = 1.7819e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 528.27 \text{ s}$$

$$\phi_{\text{HeII}} = 2.689$$

$$b_2 = 2.3154e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1826.7 \text{ s}$$

$$\phi_{\text{CZ}} = 6.2832$$

$$d_0 = 8.0083e-05$$

$$d_2 = 5.0277e-08 \mu\text{Hz}^{-2}$$

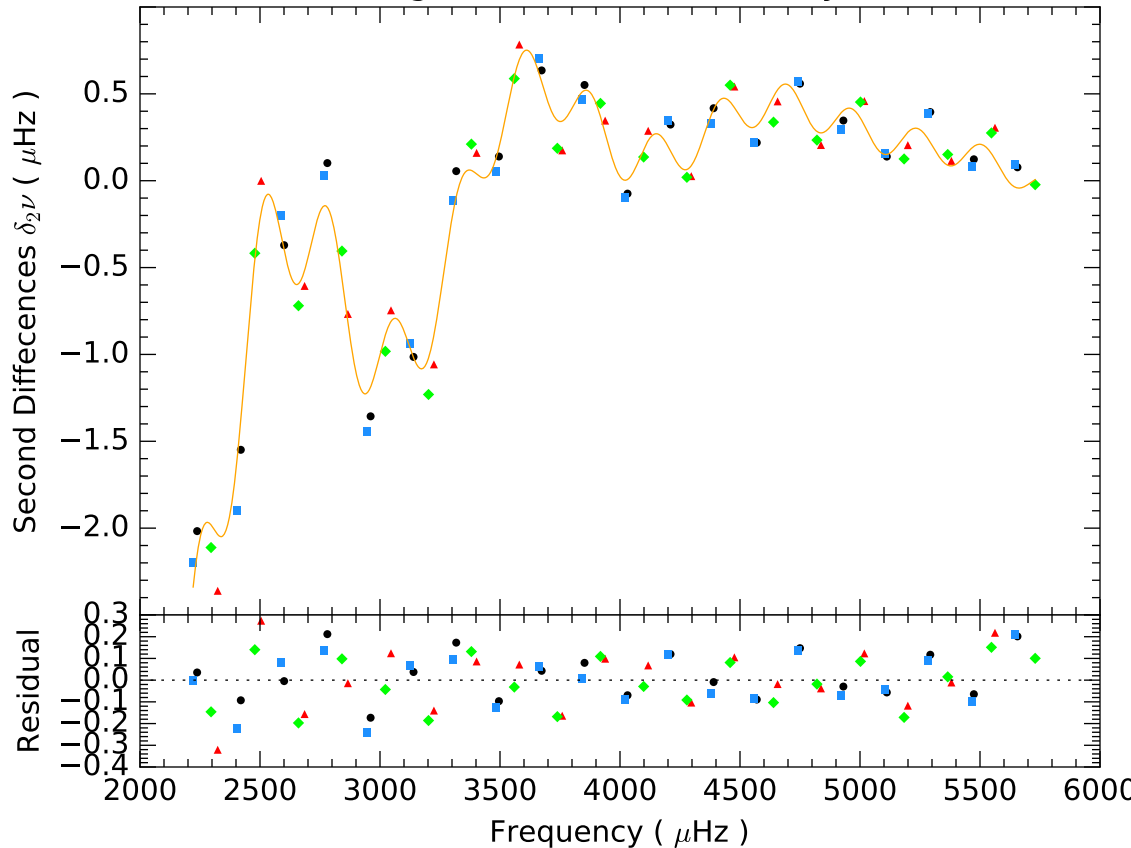
$$\tau_{\text{HI}} = 326.1 \text{ s}$$

$$\phi_{\text{HI}} = 5.1257$$

profile40

$$\chi^2_\nu(\text{dof} = 65) = 0.036249$$

Age after ZAMS: 8.710 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -8.0566 \mu \text{ Hz}$$

$$a_1 = 0.0036786$$

$$a_2 = -3.9851e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013554$$

$$c_2 = 1.9036e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 478.23 \text{ s}$$

$$\phi_{HeII} = 4.7822$$

$$b_2 = 2.5493e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1837.8 \text{ s}$$

$$\phi_{CZ} = 6.2832$$

$$d_0 = 0.00011712$$

$$d_2 = 8.3258e-08 \mu\text{Hz}^{-2}$$

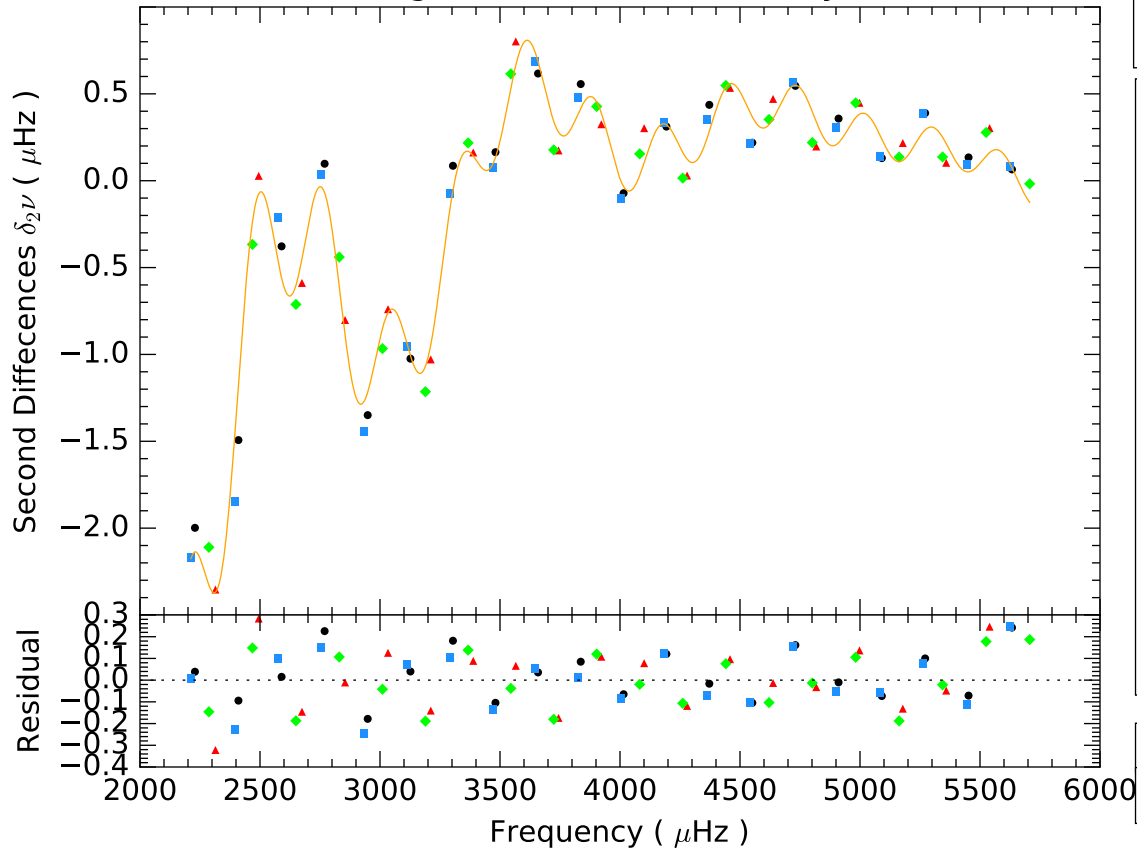
$$\tau_{HI} = 182.89 \text{ s}$$

$$\phi_{HI} = 0.0012328$$

profile41

$$\chi^2_\nu(\text{dof} = 65) = 0.018527$$

Age after ZAMS: 9.010 Gyr



$$a_0 = -8.7818 \mu\text{Hz}$$

$$a_1 = 0.0040993$$

$$a_2 = -4.5403e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013395$$

$$c_2 = 1.9061e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 486.57 \text{ s}$$

$$\phi_{\text{HeII}} = 4.5666$$

$$b_2 = 3.0783e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1776.0 \text{ s}$$

$$\phi_{\text{CZ}} = 2.6444$$

$$d_0 = 3.5967e-05$$

$$d_2 = 1.3544e-08 \mu\text{Hz}^{-2}$$

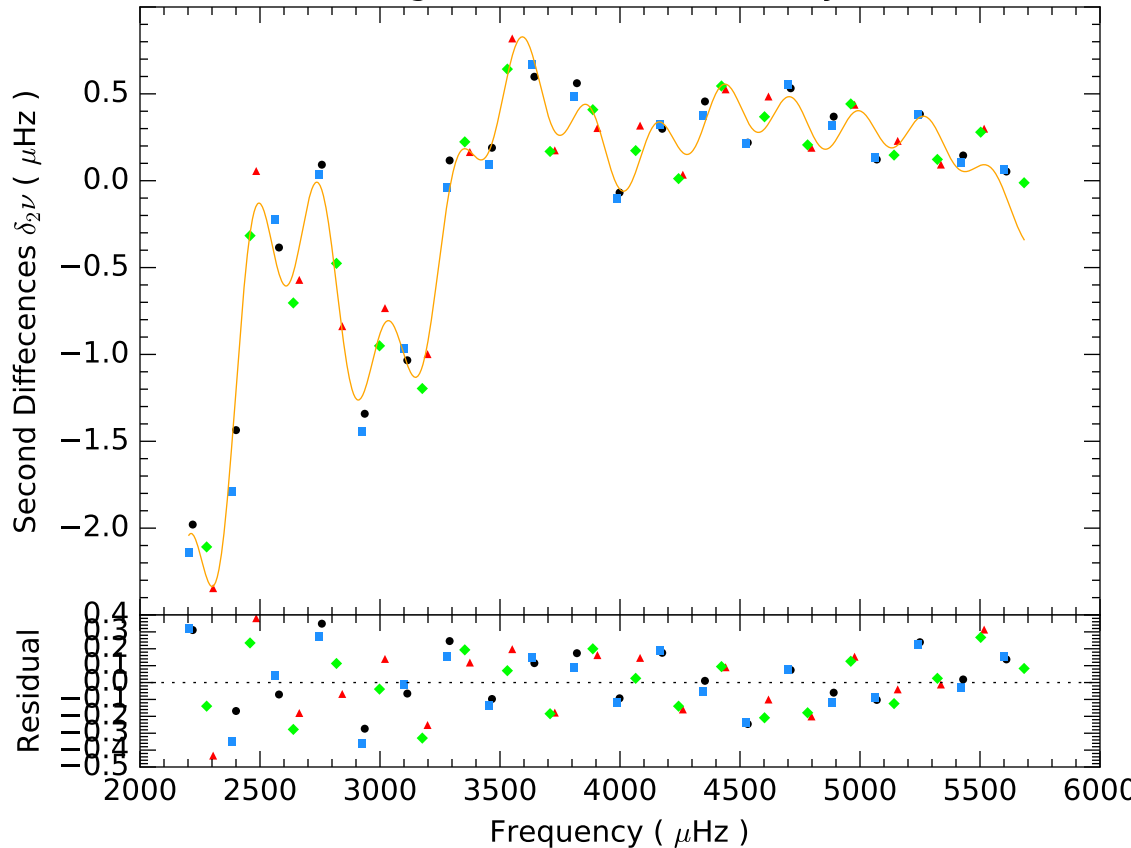
$$\tau_{\text{HI}} = 192.31 \text{ s}$$

$$\phi_{\text{HI}} = 6.354e-05$$

profile42

$$\chi^2_\nu(\text{dof} = 65) = 0.021088$$

Age after ZAMS: 9.310 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -8.0976 \mu \text{ Hz}$$

$$a_1 = 0.0038399$$

$$a_2 = -4.3279e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0011494$$

$$c_2 = 1.8029e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 518.44 \text{ s}$$

$$\phi_{HeII} = 3.4335$$

$$b_2 = 2.8311e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1786.4 \text{ s}$$

$$\phi_{CZ} = 2.5814$$

$$d_0 = 2.7975e-05$$

$$d_2 = 2.8401e-15 \mu\text{Hz}^{-2}$$

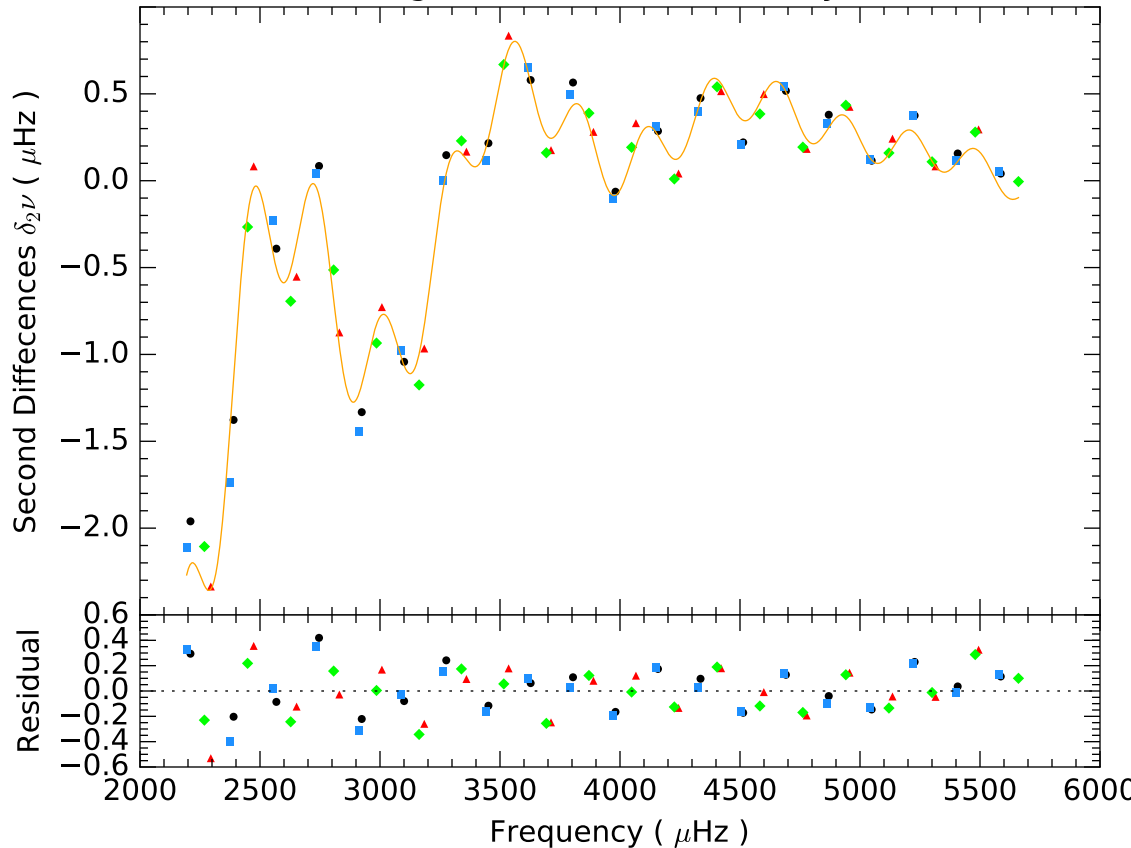
$$\tau_{HI} = 308.48 \text{ s}$$

$$\phi_{HI} = 8.8944e-07$$

profile43

$$\chi^2_\nu(\text{dof} = 65) = 0.042358$$

Age after ZAMS: 9.610 Gyr



- $\ell=0$
- ◆ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -8.1105 \mu \text{ Hz}$$

$$a_1 = 0.0036669$$

$$a_2 = -3.9548e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013747$$

$$c_2 = 1.9206e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{He II}} = 500.91 \text{ s}$$

$$\phi_{\text{He II}} = 4.2753$$

$$b_2 = 2.8805e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1821.8 \text{ s}$$

$$\phi_{\text{CZ}} = 1.7187$$

$$d_0 = 0.00029963$$

$$d_2 = 1.2329e-07 \mu\text{Hz}^{-2}$$

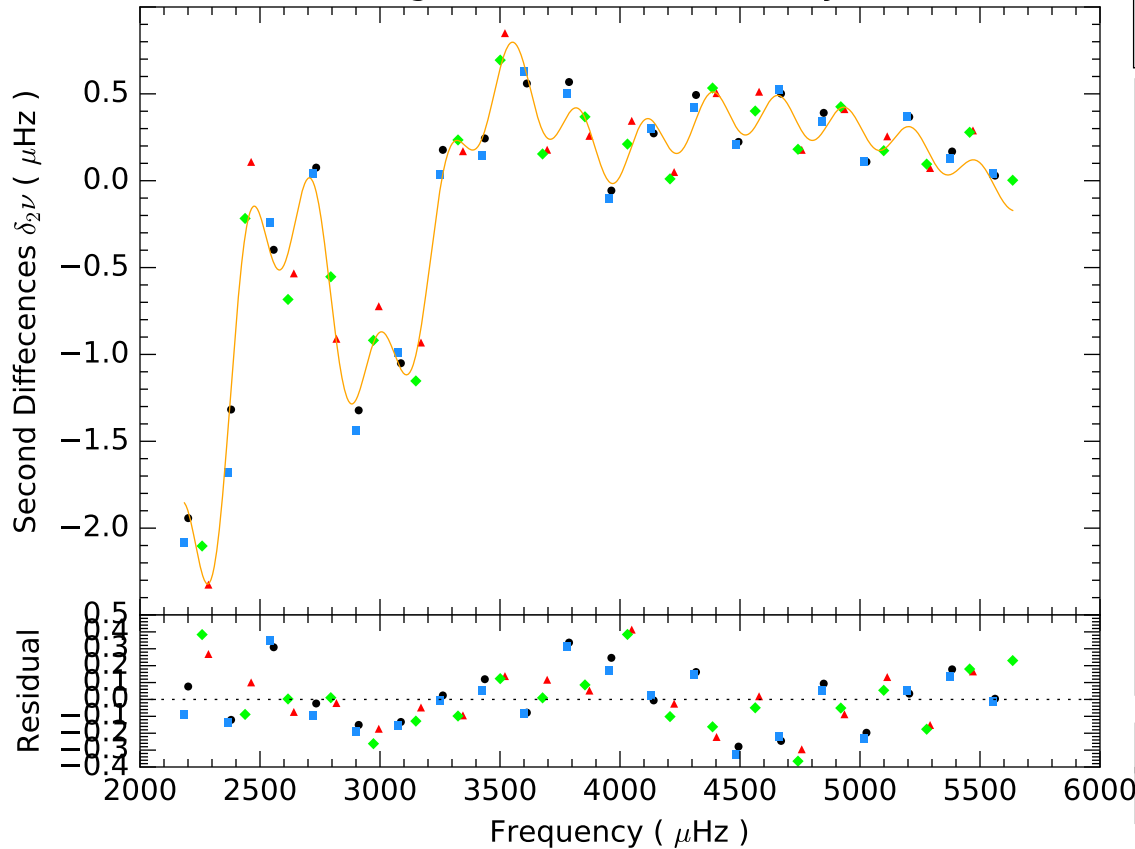
$$\tau_{\text{HI}} = 119.48 \text{ s}$$

$$\phi_{\text{HI}} = 2.7945$$

profile44

$$\chi^2_{\nu}(\text{dof} = 65) = 0.044844$$

Age after ZAMS: 9.910 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -6.5268 \mu\text{Hz}$$

$$a_1 = 0.0030943$$

$$a_2 = -3.4622e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.00071938$$

$$c_2 = 2.0046e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 330.61 \text{ s}$$

$$\phi_{\text{HeII}} = 5.6063$$

$$b_2 = 2.5975e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1809.0 \text{ s}$$

$$\phi_{\text{CZ}} = 2.4308$$

$$d_0 = 0.0024416$$

$$d_2 = 2.682e-07 \mu\text{Hz}^{-2}$$

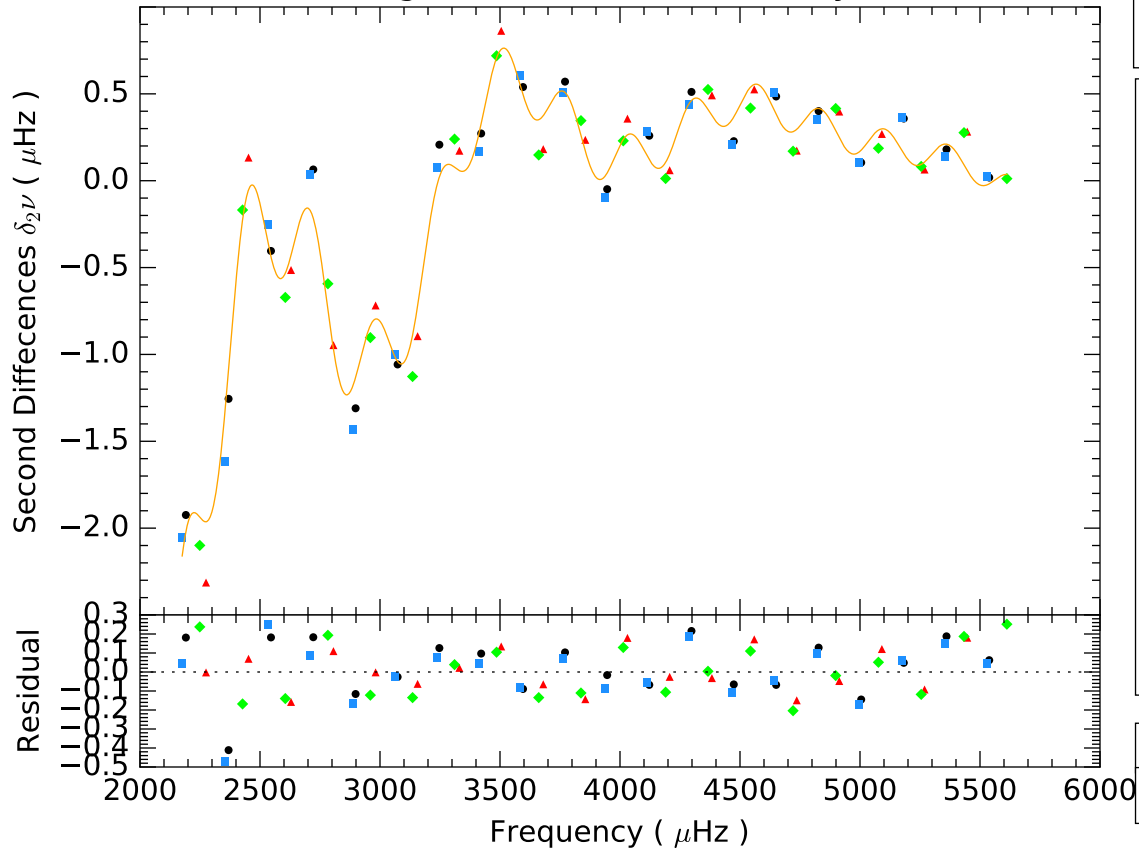
$$\tau_{\text{HI}} = 548.41 \text{ s}$$

$$\phi_{\text{HI}} = 2.3128$$

profile45

$$\chi^2_\nu(\text{dof} = 65) = 0.037977$$

Age after ZAMS: 10.210 Gyr



- $\ell=0$
- ♦ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -7.7203 \mu\text{Hz}$$

$$a_1 = 0.0035913$$

$$a_2 = -3.9631e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.001446$$

$$c_2 = 2.0277e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 488.27 \text{ s}$$

$$\phi_{\text{HeII}} = 4.9322$$

$$b_2 = 2.3539e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1887.0 \text{ s}$$

$$\phi_{\text{CZ}} = 6.2832$$

$$d_0 = 0.00020537$$

$$d_2 = 1.1744e-07 \mu\text{Hz}^{-2}$$

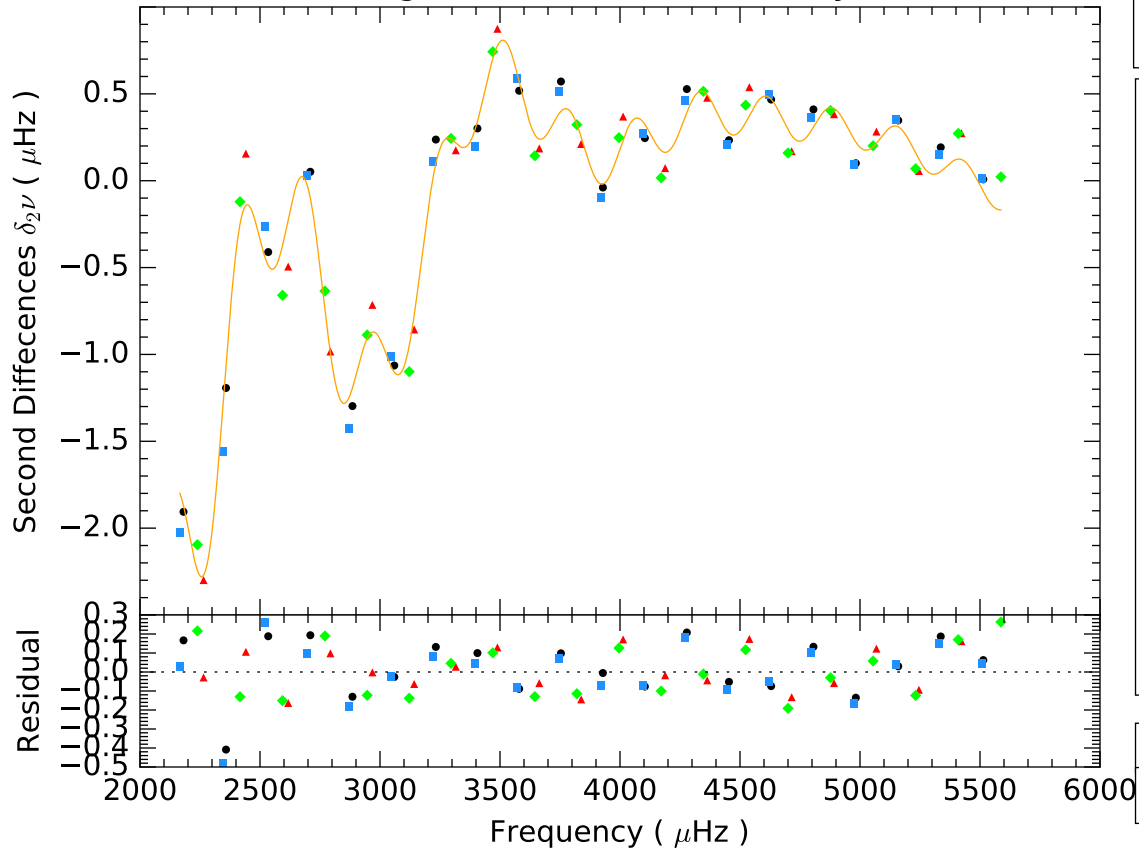
$$\tau_{\text{HI}} = 170.06 \text{ s}$$

$$\phi_{\text{HI}} = 0.65658$$

profile46

$$\chi^2_\nu(\text{dof} = 65) = 0.024306$$

Age after ZAMS: 10.510 Gyr



$$a_0 = -6.427 \mu\text{Hz}$$

$$a_1 = 0.003084$$

$$a_2 = -3.4897e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.00072716$$

$$c_2 = 2.0473e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 333.22 \text{ s}$$

$$\phi_{\text{HeII}} = 5.6298$$

$$b_2 = 2.5415e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1828.2 \text{ s}$$

$$\phi_{\text{CZ}} = 2.4898$$

$$d_0 = 0.0023105$$

$$d_2 = 2.6675e-07 \mu\text{Hz}^{-2}$$

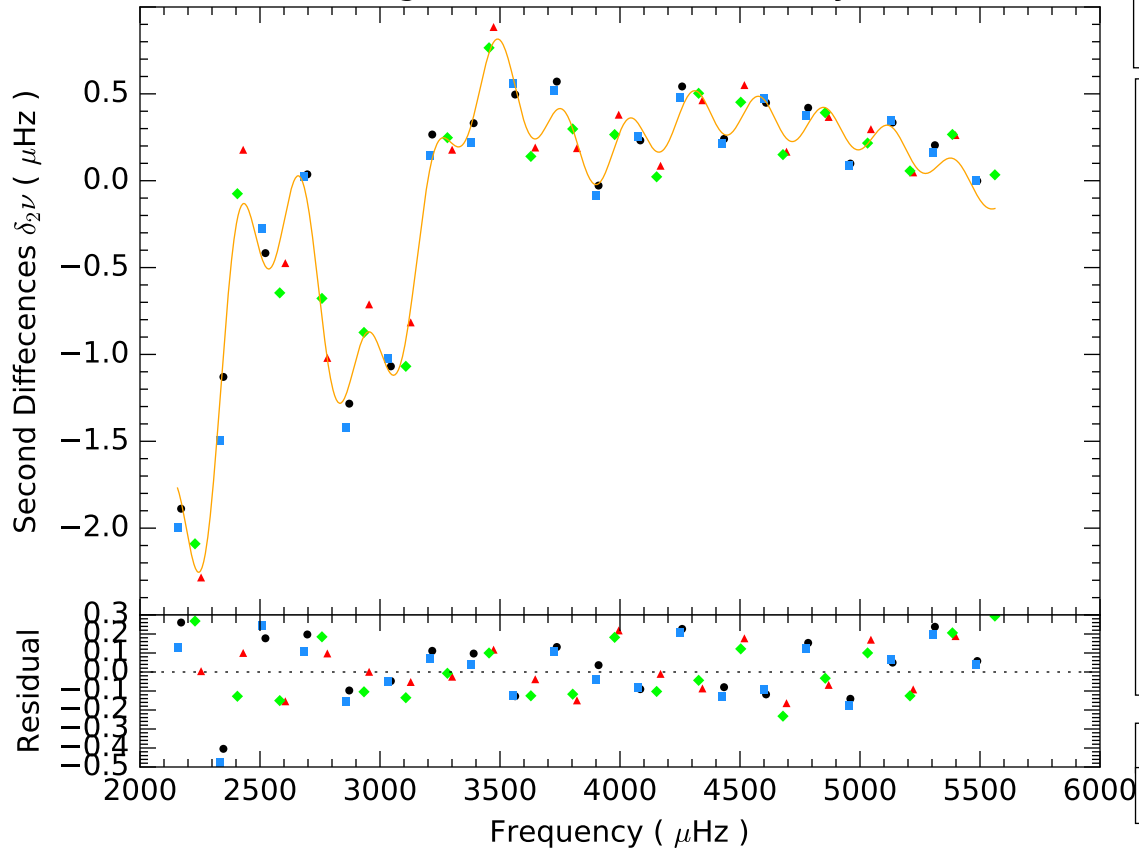
$$\tau_{\text{HI}} = 557.26 \text{ s}$$

$$\phi_{\text{HI}} = 2.2304$$

profile47

$$\chi^2_{\nu}(\text{dof} = 65) = 0.024076$$

Age after ZAMS: 10.810 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -6.3797 \mu \text{ Hz}$$

$$a_1 = 0.0030806$$

$$a_2 = -3.5064e-07 \mu \text{ Hz}^{-2}$$

$$c_0 = 0.00072897$$

$$c_2 = 2.0653e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{He II}} = 334.93 \text{ s}$$

$$\phi_{\text{He II}} = 5.6271$$

$$b_2 = 2.5211e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1841.2 \text{ s}$$

$$\phi_{\text{CZ}} = 2.4148$$

$$d_0 = 0.0022452$$

$$d_2 = 2.6602e-07 \mu \text{ Hz}^{-2}$$

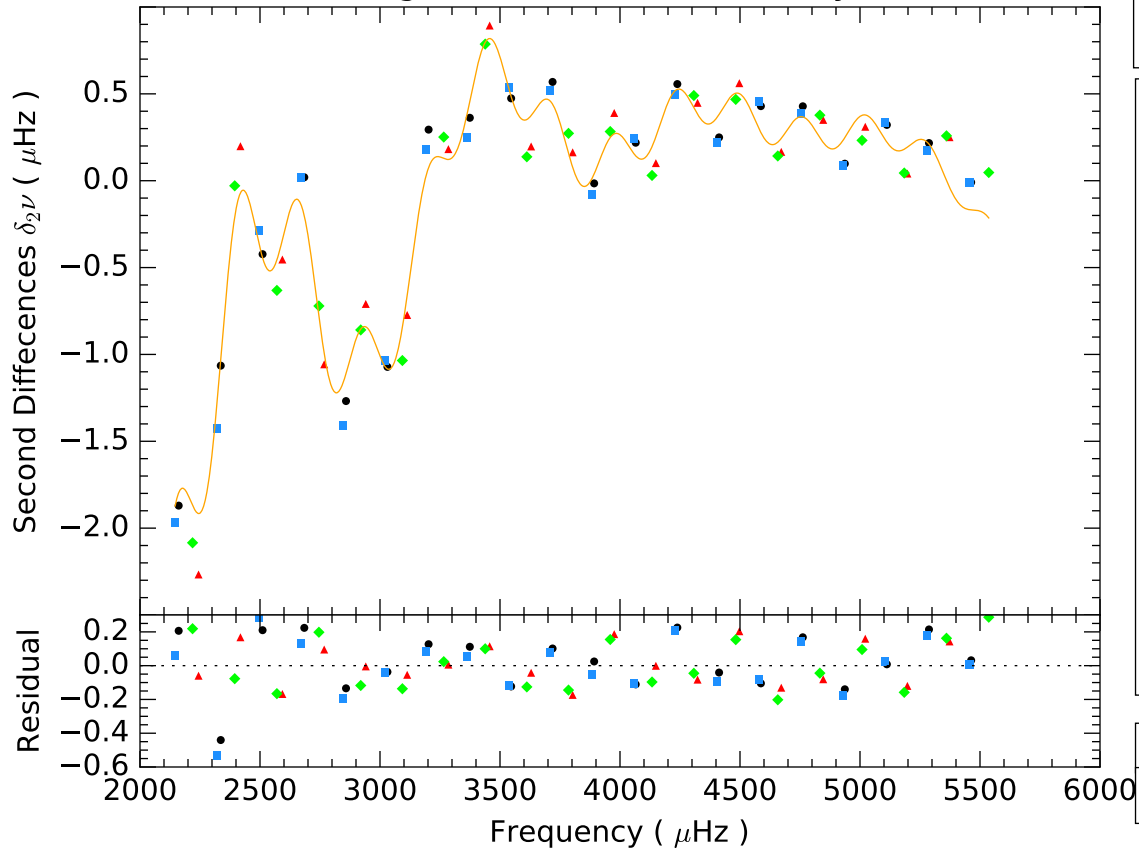
$$\tau_{\text{HI}} = 562.05 \text{ s}$$

$$\phi_{\text{HI}} = 2.1811$$

profile48

$$\chi^2_{\nu}(\text{dof} = 65) = 0.028571$$

Age after ZAMS: 11.110 Gyr



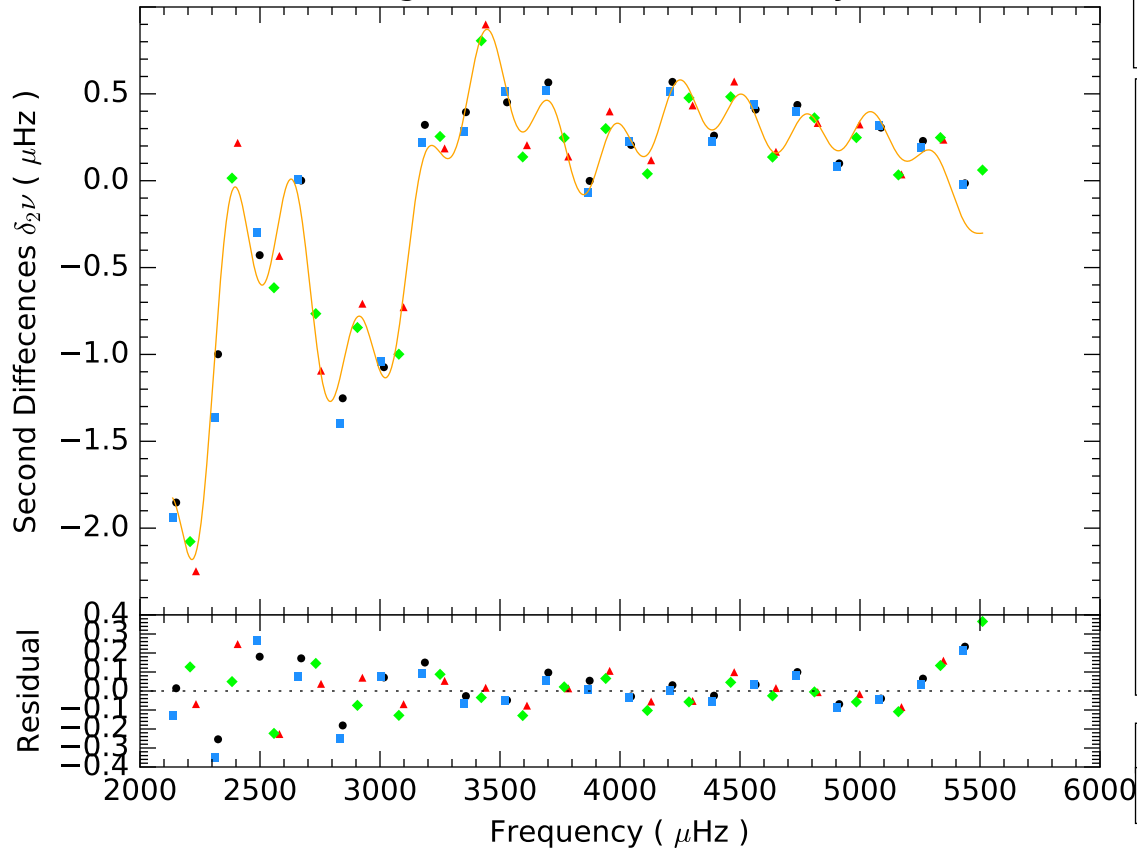
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$a_0 = -7.8299 \mu\text{Hz}$
 $a_1 = 0.0038463$
 $a_2 = -4.4827e-07 \mu\text{Hz}^{-2}$
 $c_0 = 0.0010438$
 $c_2 = 1.7817e-07 \mu\text{Hz}^{-2}$
 $\tau_{\text{HeII}} = 533.46 \text{ s}$
 $\phi_{\text{HeII}} = 3.5797$
 $b_2 = 2.2218e+06 \text{ mHz}^3$
 $\tau_{\text{CZ}} = 1917.8 \text{ s}$
 $\phi_{\text{CZ}} = 6.2832$
 $d_0 = 2.9301e-05$
 $d_2 = 4.743e-11 \mu\text{Hz}^{-2}$
 $\tau_{\text{HI}} = 317.38 \text{ s}$
 $\phi_{\text{HI}} = 1.7713e-11$

profile49

$\chi^2_\nu(\text{dof} = 65) = 0.029444$

Age after ZAMS: 11.410 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -7.7951 \mu\text{Hz}$$

$$a_1 = 0.0038534$$

$$a_2 = -4.5179e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0010487$$

$$c_2 = 1.7945e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 537.85 \text{ s}$$

$$\phi_{HeII} = 3.5426$$

$$b_2 = 2.7354e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1874.0 \text{ s}$$

$$\phi_{CZ} = 2.0997$$

$$d_0 = 2.9844e-05$$

$$d_2 = 1.3996e-10 \mu\text{Hz}^{-2}$$

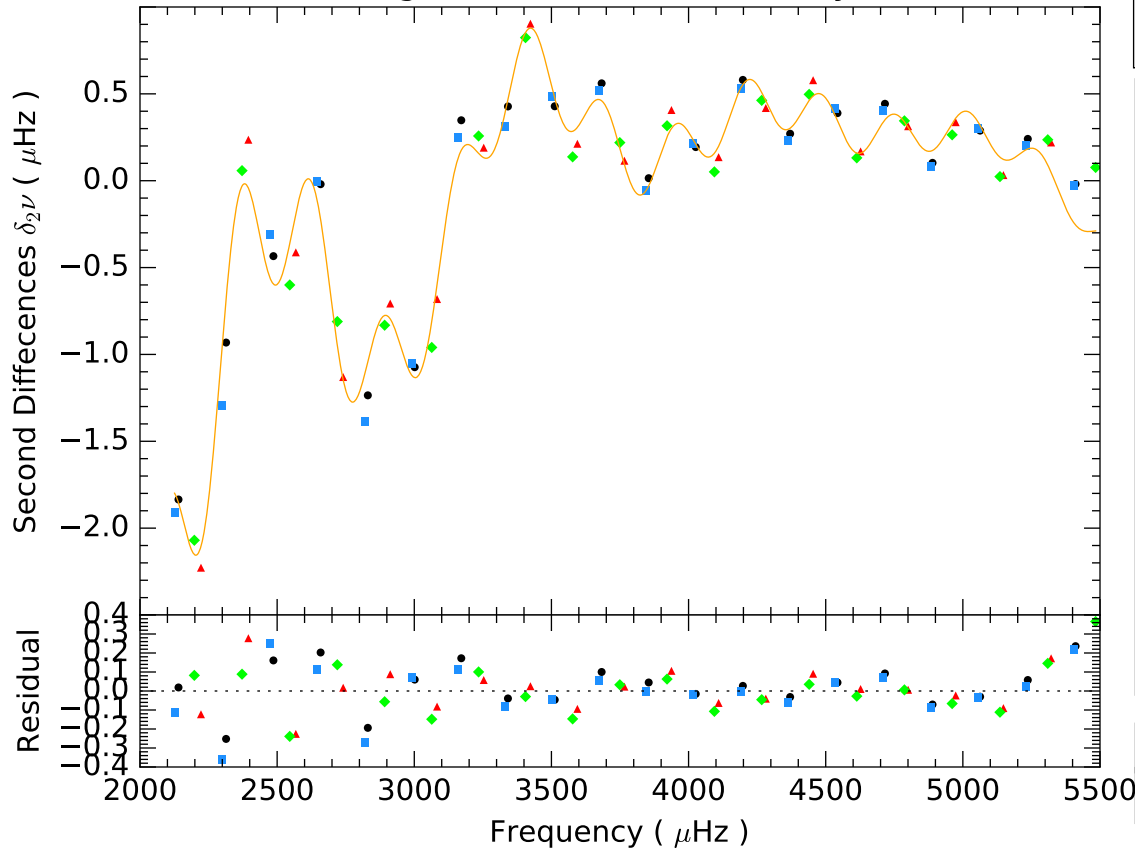
$$\tau_{HI} = 319.02 \text{ s}$$

$$\phi_{HI} = 2.9395e-07$$

profile50

$$\chi^2_\nu(\text{dof} = 65) = 0.018081$$

Age after ZAMS: 11.710 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -7.7574 \mu\text{Hz}$$

$$a_1 = 0.0038603$$

$$a_2 = -4.5548e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0010404$$

$$c_2 = 1.7994e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 540.58 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5735$$

$$b_2 = 2.7259e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1887.7 \text{ s}$$

$$\phi_{\text{CZ}} = 2.0318$$

$$d_0 = 3.0146e-05$$

$$d_2 = 2.7501e-13 \mu\text{Hz}^{-2}$$

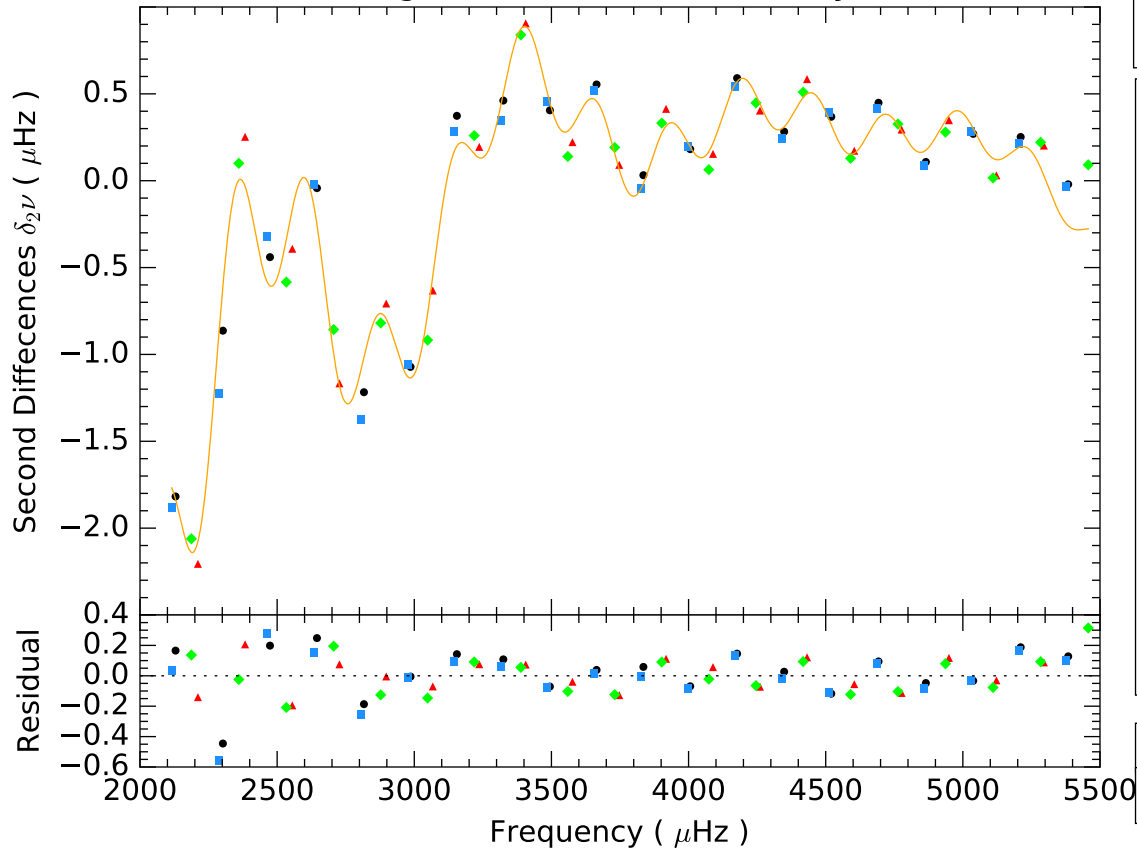
$$\tau_{\text{HI}} = 320.79 \text{ s}$$

$$\phi_{\text{HI}} = 9.5097e-05$$

profile51

$$\chi^2_\nu(\text{dof} = 65) = 0.01938$$

Age after ZAMS: 12.010 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- — fit

$$a_0 = -7.7143 \mu\text{Hz}$$

$$a_1 = 0.0038644$$

$$a_2 = -4.5884e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0010353$$

$$c_2 = 1.807e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 543.21 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6113$$

$$b_2 = 2.7616e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1900.0 \text{ s}$$

$$\phi_{\text{CZ}} = 2.0152$$

$$d_0 = 3.0292e-05$$

$$d_2 = 8.6242e-16 \mu\text{Hz}^{-2}$$

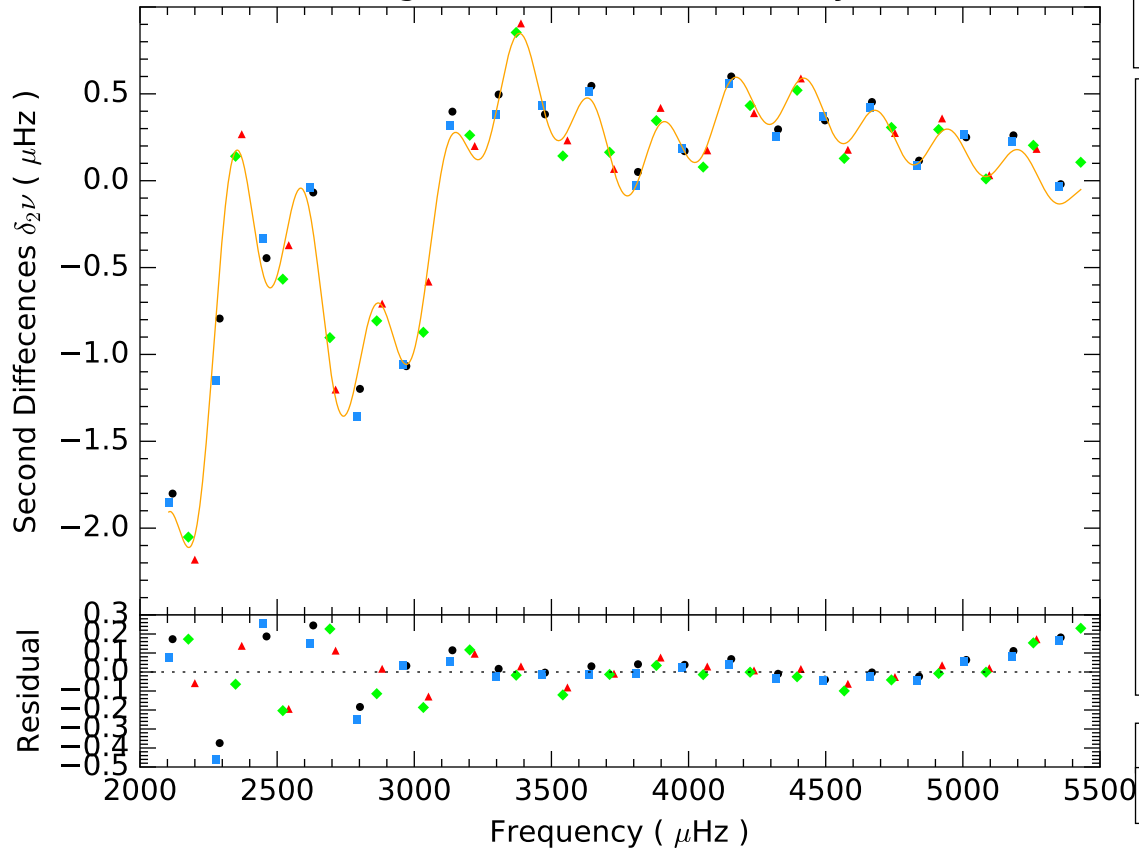
$$\tau_{\text{HI}} = 321.62 \text{ s}$$

$$\phi_{\text{HI}} = 0.049984$$

profile52

$$\chi^2_\nu(\text{dof} = 65) = 0.02532$$

Age after ZAMS: 12.310 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -7.6824 \mu\text{Hz}$$

$$a_1 = 0.0036838$$

$$a_2 = -4.2155e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0015479$$

$$c_2 = 2.196e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 514.93 \text{ s}$$

$$\phi_{\text{HeII}} = 4.8356$$

$$b_2 = 2.8876e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1918.9 \text{ s}$$

$$\phi_{\text{CZ}} = 1.6501$$

$$d_0 = 0.00060164$$

$$d_2 = 1.9545e-07 \mu\text{Hz}^{-2}$$

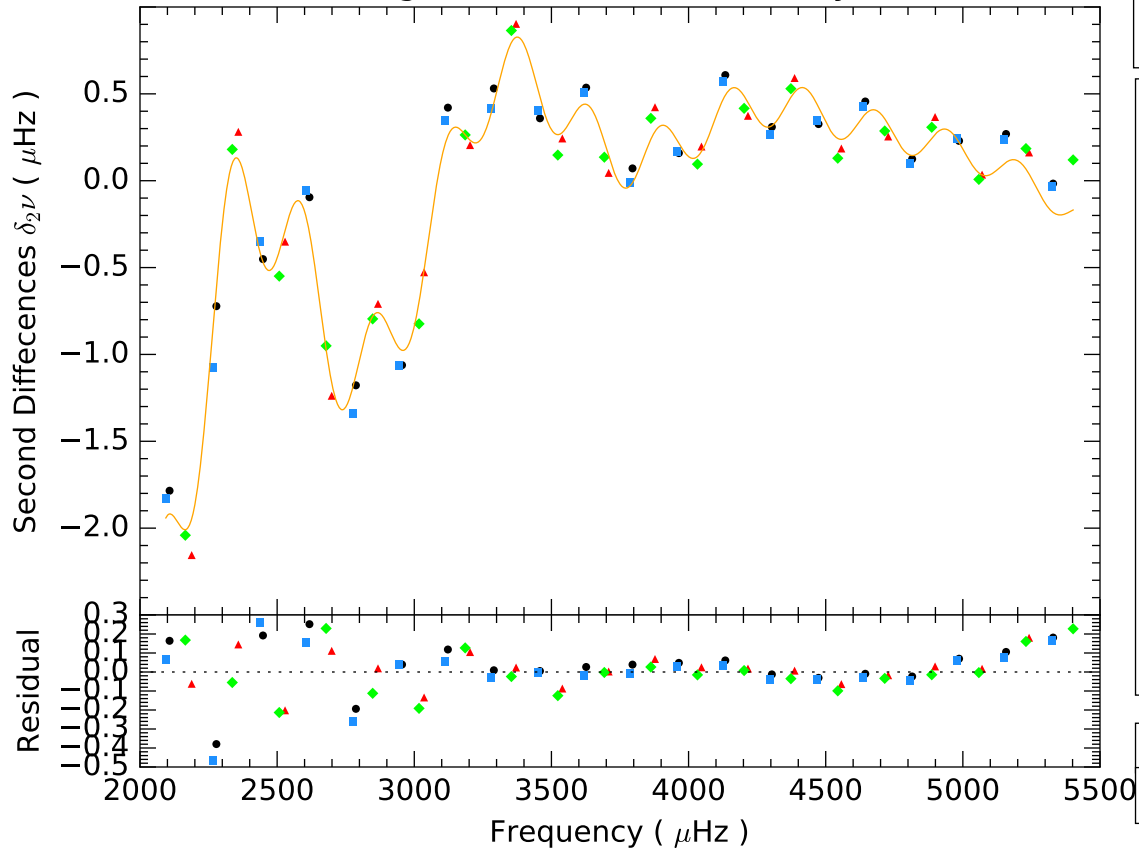
$$\tau_{\text{HI}} = 122.59 \text{ s}$$

$$\phi_{\text{HI}} = 2.6808$$

profile53

$$\chi^2_\nu(\text{dof} = 65) = 0.018958$$

Age after ZAMS: 12.610 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -7.3088 \mu\text{Hz}$$

$$a_1 = 0.0036606$$

$$a_2 = -4.3377e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0019704$$

$$c_2 = 2.501e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 523.63 \text{ s}$$

$$\phi_{\text{HeII}} = 4.5352$$

$$b_2 = 2.3948e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1919.2 \text{ s}$$

$$\phi_{\text{CZ}} = 1.7832$$

$$d_0 = 0.00023778$$

$$d_2 = 1.5419e-07 \mu\text{Hz}^{-2}$$

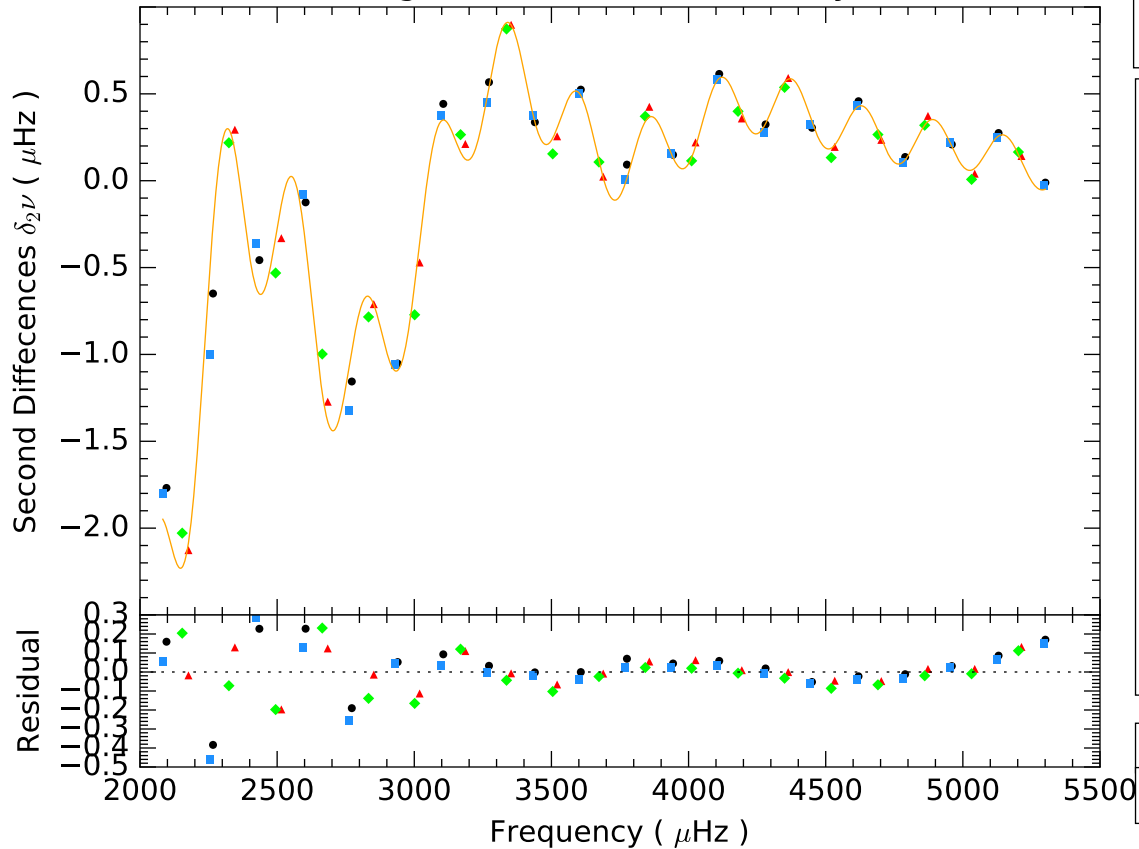
$$\tau_{\text{HI}} = 266.59 \text{ s}$$

$$\phi_{\text{HI}} = 3.2303$$

profile54

$$\chi^2_\nu(\text{dof} = 65) = 0.019644$$

Age after ZAMS: 12.910 Gyr



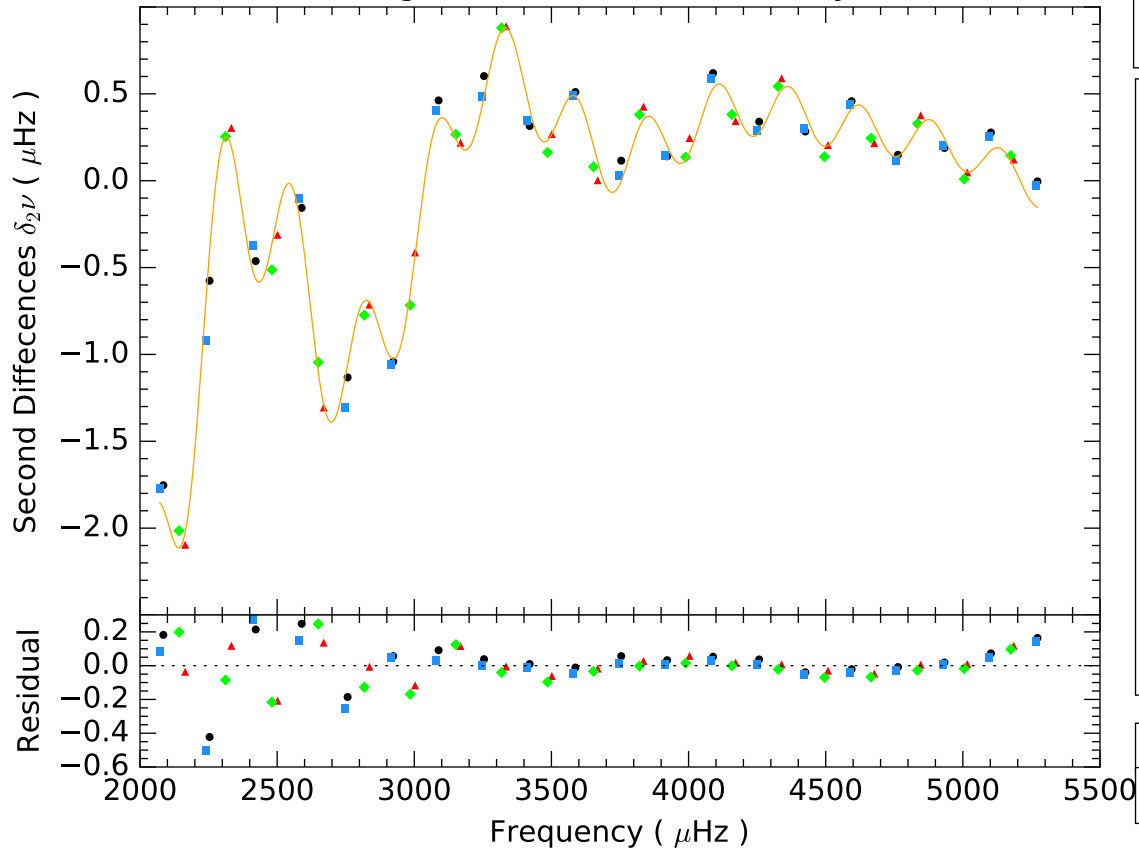
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -7.5737 \mu\text{Hz} \\
 a_1 &= 0.0035676 \\
 a_2 &= -4.01e-07 \mu\text{Hz}^{-1} \\
 c_0 &= 0.0018304 \\
 c_2 &= 2.3907e-07 \mu\text{Hz}^{-2} \\
 \tau_{HeII} &= 518.38 \text{ s} \\
 \phi_{HeII} &= 4.9688 \\
 b_2 &= 3.2506e+06 \text{ mHz}^3 \\
 \tau_{CZ} &= 1934.4 \text{ s} \\
 \phi_{CZ} &= 2.0201 \\
 d_0 &= 0.0006684 \\
 d_2 &= 1.715e-07 \mu\text{Hz}^{-2} \\
 \tau_{HI} &= 122.76 \text{ s} \\
 \phi_{HI} &= 2.8197
 \end{aligned}$$

profile55

$$\chi^2_\nu(\text{dof} = 64) = 0.018281$$

Age after ZAMS: 13.210 Gyr



- $\ell=0$
- ◆ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -7.1107 \mu \text{ Hz}$$

$$a_1 = 0.0035911$$

$$a_2 = -4.2824e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0020853$$

$$c_2 = 2.6345e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 532.96 \text{ s}$$

$$\phi_{\text{HeII}} = 4.4642$$

$$b_2 = 2.8972e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1938.6 \text{ s}$$

$$\phi_{\text{CZ}} = 2.0415$$

$$d_0 = 0.00020376$$

$$d_2 = 1.3354e-07 \mu\text{Hz}^{-2}$$

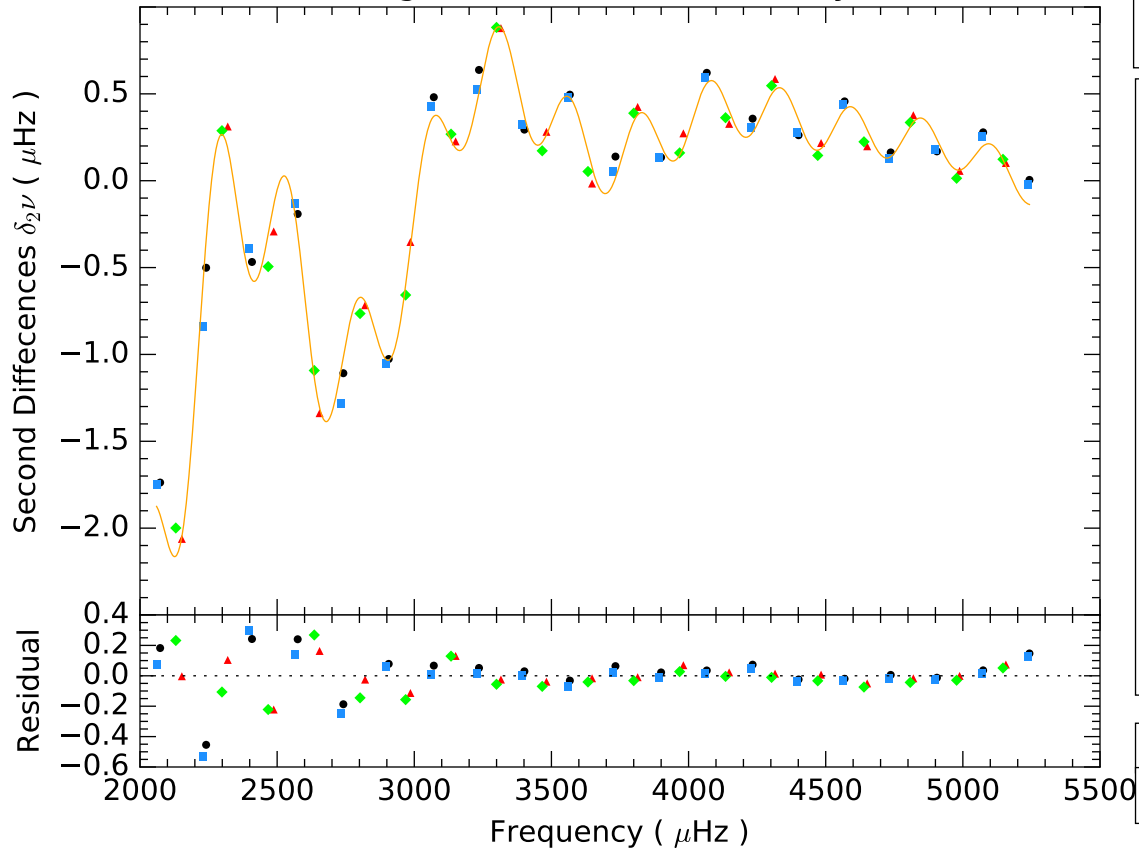
$$\tau_{\text{HI}} = 257.88 \text{ s}$$

$$\phi_{\text{HI}} = 3.6469$$

profile56

$$\chi^2_\nu(\text{dof} = 64) = 0.019434$$

Age after ZAMS: 13.510 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -7.1574 \mu\text{Hz}$$

$$a_1 = 0.0036349$$

$$a_2 = -4.3569e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0019838$$

$$c_2 = 2.6071e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 542.31 \text{ s}$$

$$\phi_{\text{HeII}} = 4.2796$$

$$b_2 = 2.9542e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1950.1 \text{ s}$$

$$\phi_{\text{CZ}} = 2.1122$$

$$d_0 = 0.00014916$$

$$d_2 = 1.0992e-07 \mu\text{Hz}^{-2}$$

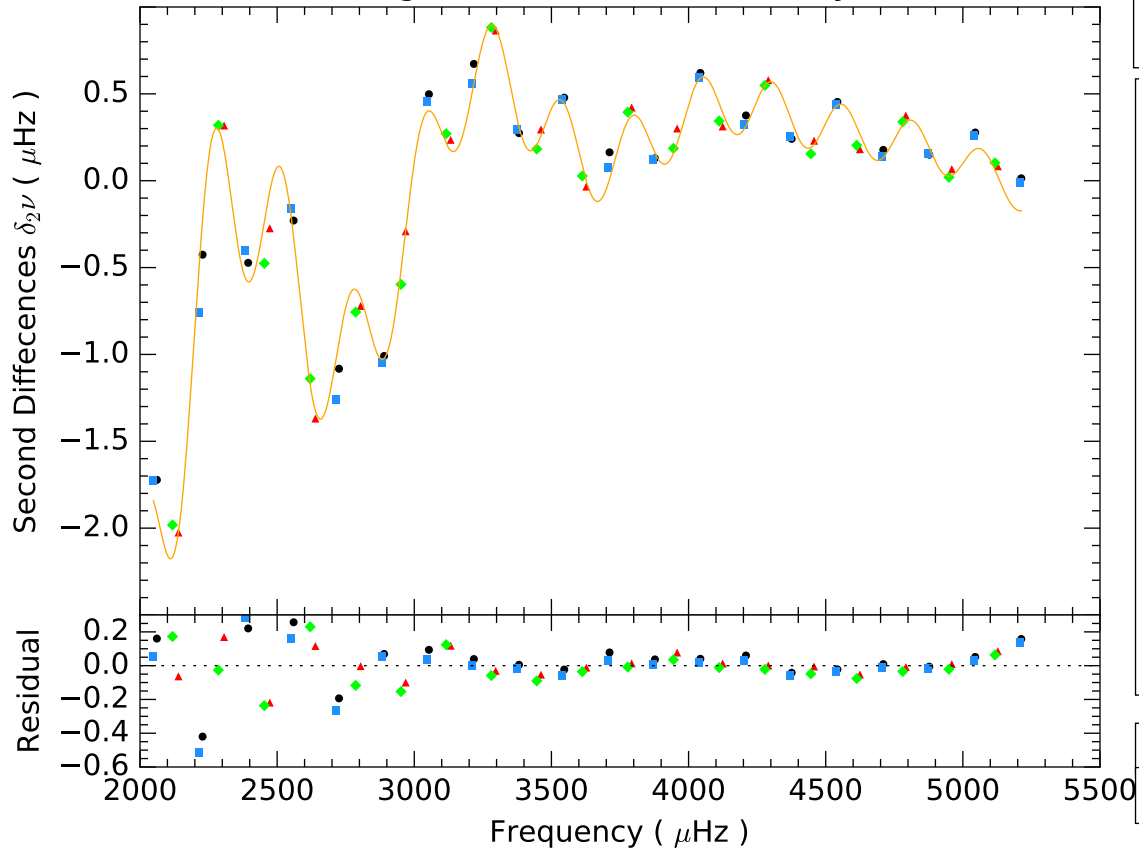
$$\tau_{\text{HI}} = 245.98 \text{ s}$$

$$\phi_{\text{HI}} = 4.205$$

profile57

$$\chi^2_\nu(\text{dof} = 64) = 0.02088$$

Age after ZAMS: 13.810 Gyr



- $\ell=0$
- ◆ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -6.7562 \mu\text{Hz}$$

$$a_1 = 0.0034674$$

$$a_2 = -4.1972e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0019859$$

$$c_2 = 2.6182e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 545.6 \text{ s}$$

$$\phi_{\text{HeII}} = 4.2995$$

$$b_2 = 3.057e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1963.5 \text{ s}$$

$$\phi_{\text{CZ}} = 2.1789$$

$$d_0 = 0.00028379$$

$$d_2 = 1.8006e-07 \mu\text{Hz}^{-2}$$

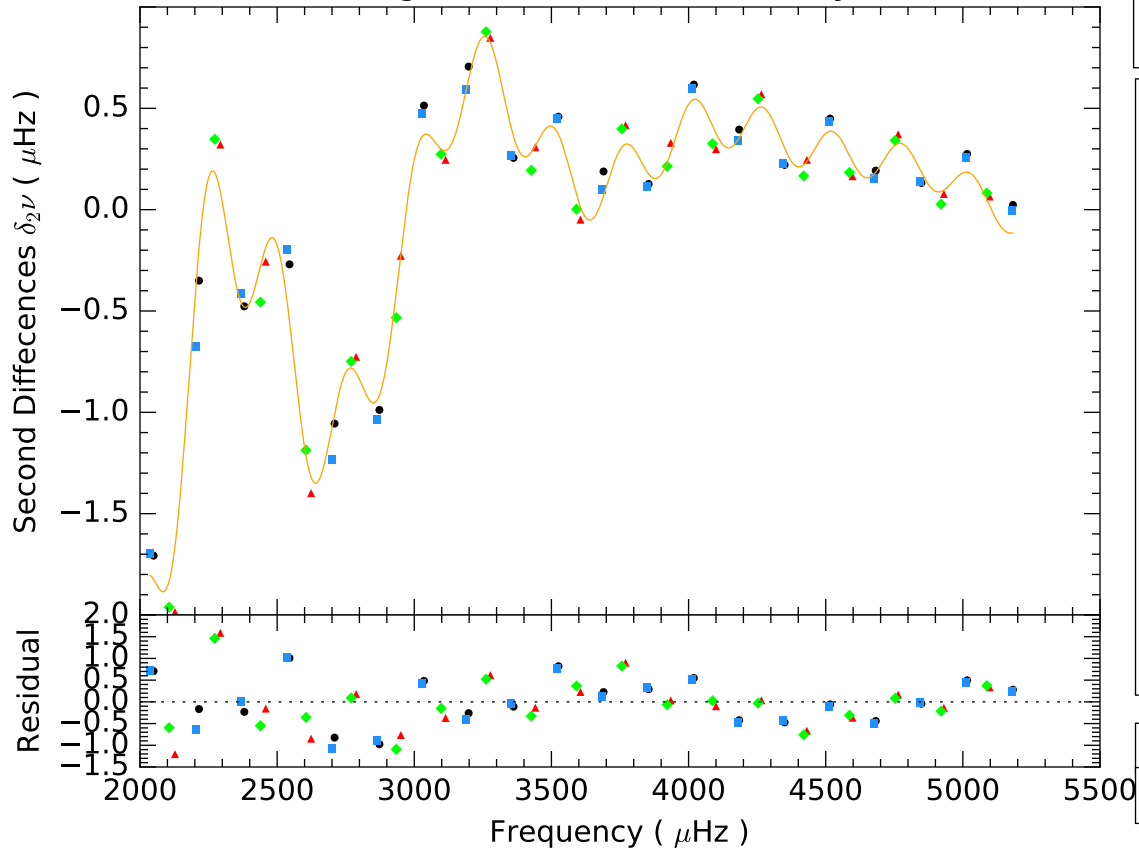
$$\tau_{\text{HI}} = 264.85 \text{ s}$$

$$\phi_{\text{HI}} = 3.6055$$

profile58

$$\chi^2_\nu(\text{dof} = 64) = 0.019555$$

Age after ZAMS: 14.110 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- — fit

$$a_0 = -6.8607 \mu\text{Hz}$$

$$a_1 = 0.003544$$

$$a_2 = -4.3161e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0018616$$

$$c_2 = 2.5468e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 548.44 \text{ s}$$

$$\phi_{\text{HeII}} = 4.4286$$

$$b_2 = 2.1659e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1980.5 \text{ s}$$

$$\phi_{\text{CZ}} = 2.0948$$

$$d_0 = 0.00019258$$

$$d_2 = 1.3404e-07 \mu\text{Hz}^{-2}$$

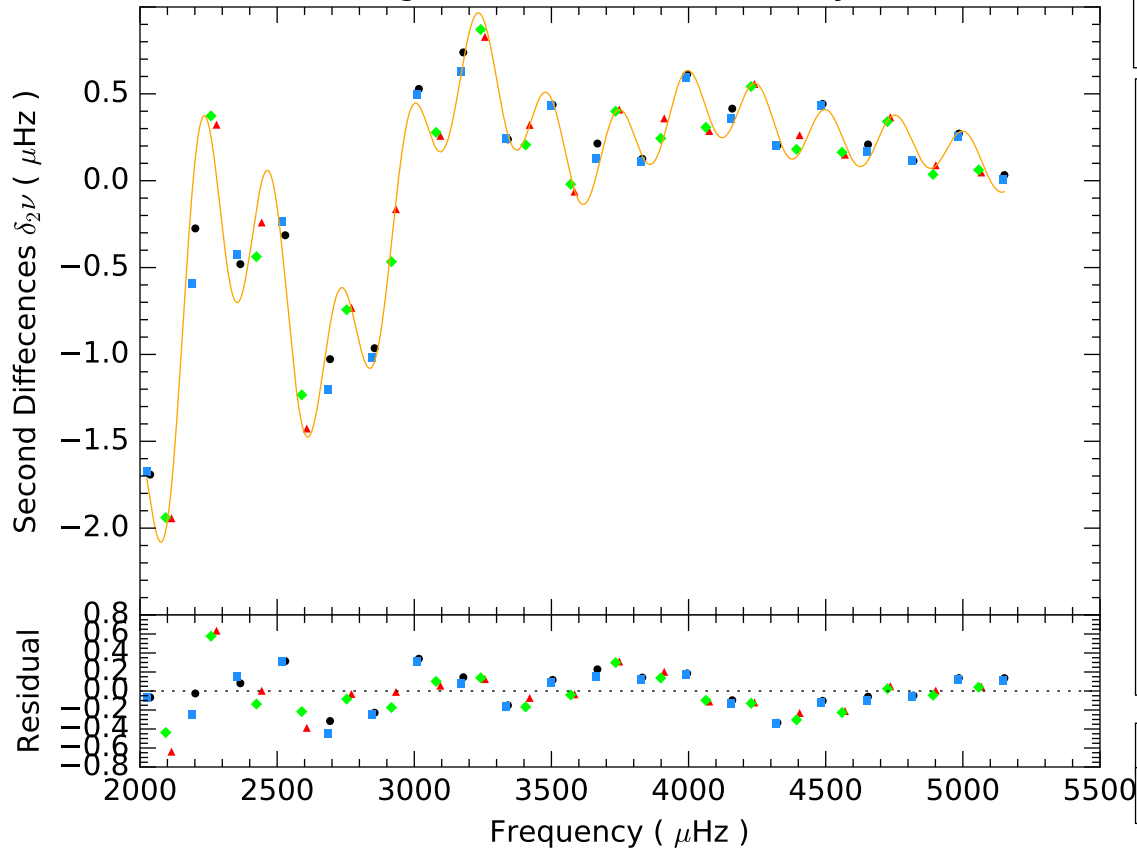
$$\tau_{\text{HI}} = 260.69 \text{ s}$$

$$\phi_{\text{HI}} = 3.6949$$

profile59

$$\chi^2_\nu(\text{dof} = 64) = 0.39711$$

Age after ZAMS: 14.410 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -6.3144 \mu\text{Hz}$$

$$a_1 = 0.0032403$$

$$a_2 = -3.9061e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0015623$$

$$c_2 = 2.3809e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 549.0 \text{ s}$$

$$\phi_{\text{HeII}} = 4.5702$$

$$b_2 = 3.2821e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1978.1 \text{ s}$$

$$\phi_{\text{CZ}} = 2.8008$$

$$d_0 = 0.00018083$$

$$d_2 = 1.2277e-07 \mu\text{Hz}^{-2}$$

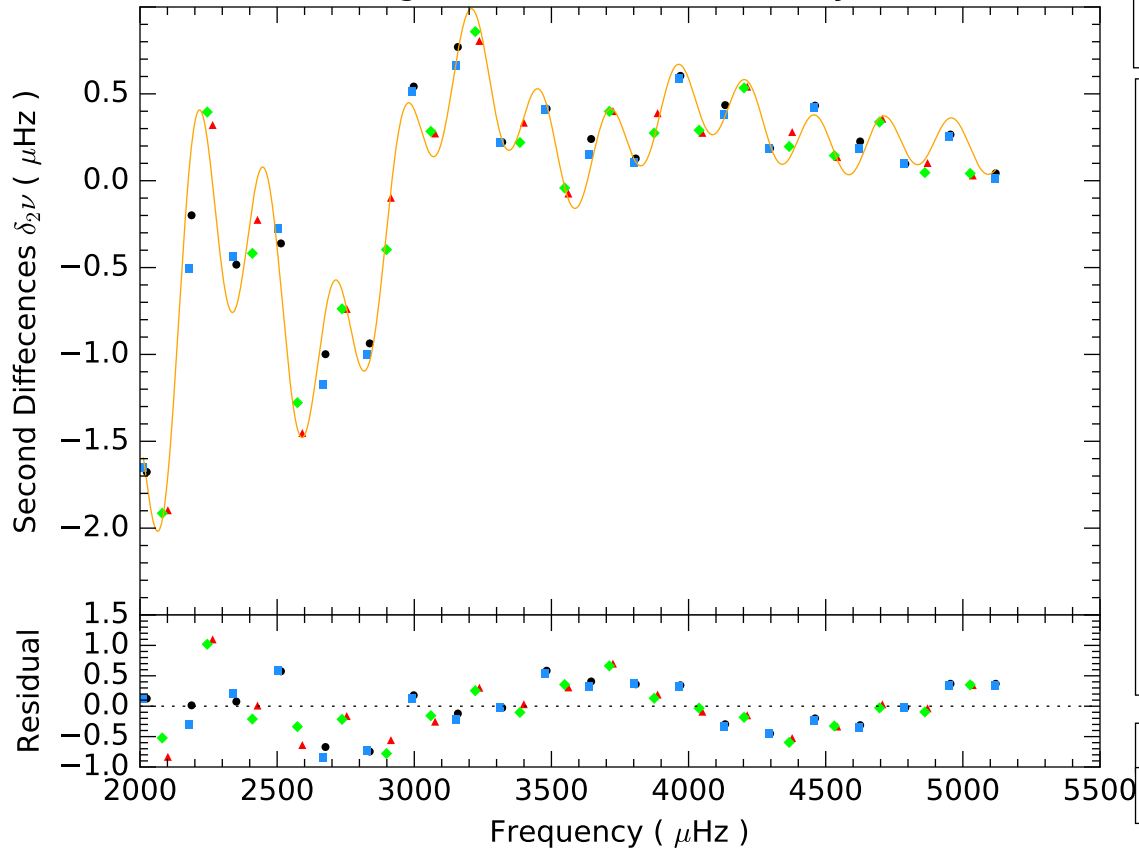
$$\tau_{\text{HI}} = 226.26 \text{ s}$$

$$\phi_{\text{HI}} = 4.9754$$

profile60

$$\chi^2_{\nu}(\text{dof} = 64) = 0.059183$$

Age after ZAMS: 14.710 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -6.8097 \mu\text{Hz}$$

$$a_1 = 0.0035068$$

$$a_2 = -4.2284e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0012737$$

$$c_2 = 2.1604e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 548.93 \text{ s}$$

$$\phi_{HeII} = 4.7468$$

$$b_2 = 3.4053e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 1998.7 \text{ s}$$

$$\phi_{CZ} = 2.6222$$

$$d_0 = 5.6394e-05$$

$$d_2 = 2.2738e-08 \mu\text{Hz}^{-2}$$

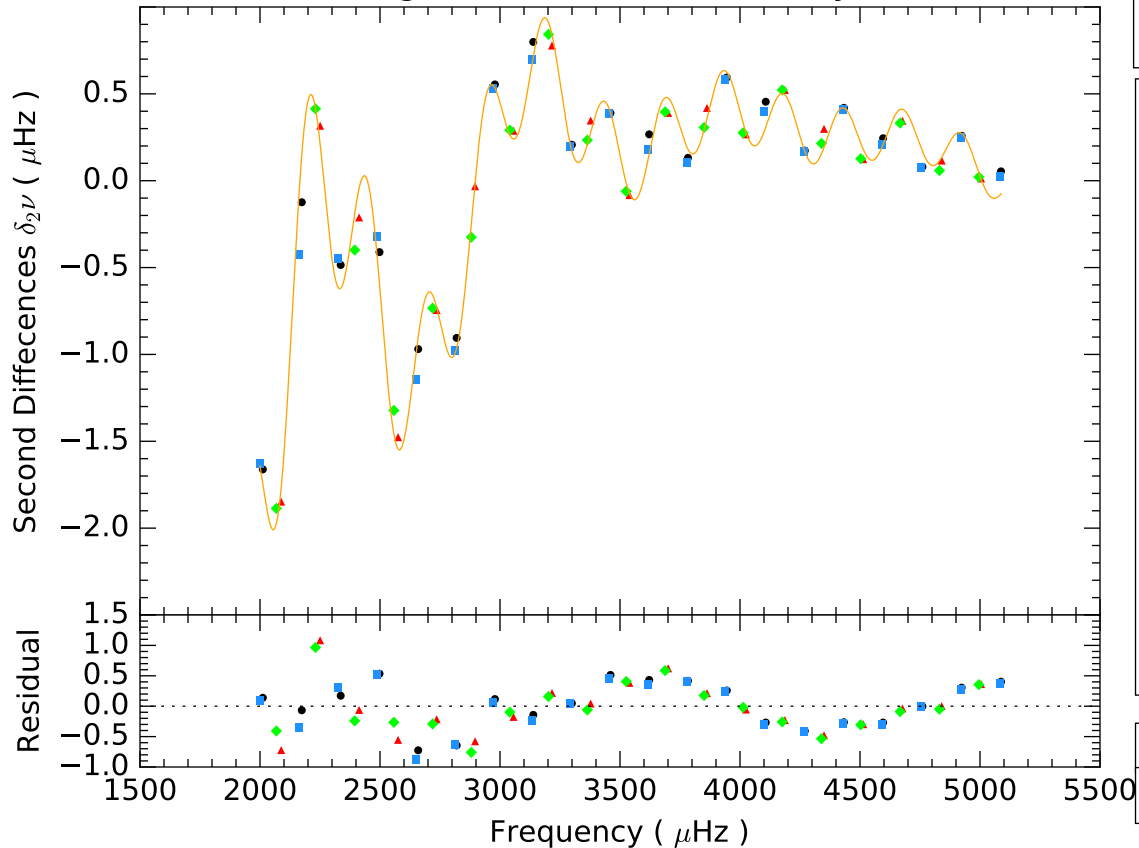
$$\tau_{HI} = 202.85 \text{ s}$$

$$\phi_{HI} = 6.2827$$

profile61

$$\chi^2_\nu(\text{dof} = 64) = 0.20936$$

Age after ZAMS: 15.010 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -6.6539 \mu\text{Hz}$$

$$a_1 = 0.003519$$

$$a_2 = -4.3759e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0019052$$

$$c_2 = 2.6787e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 581.94 \text{ s}$$

$$\phi_{HeII} = 3.8125$$

$$b_2 = 3.1616e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2022.6 \text{ s}$$

$$\phi_{CZ} = 2.1117$$

$$d_0 = 0.00010633$$

$$d_2 = 8.2089e-08 \mu\text{Hz}^{-2}$$

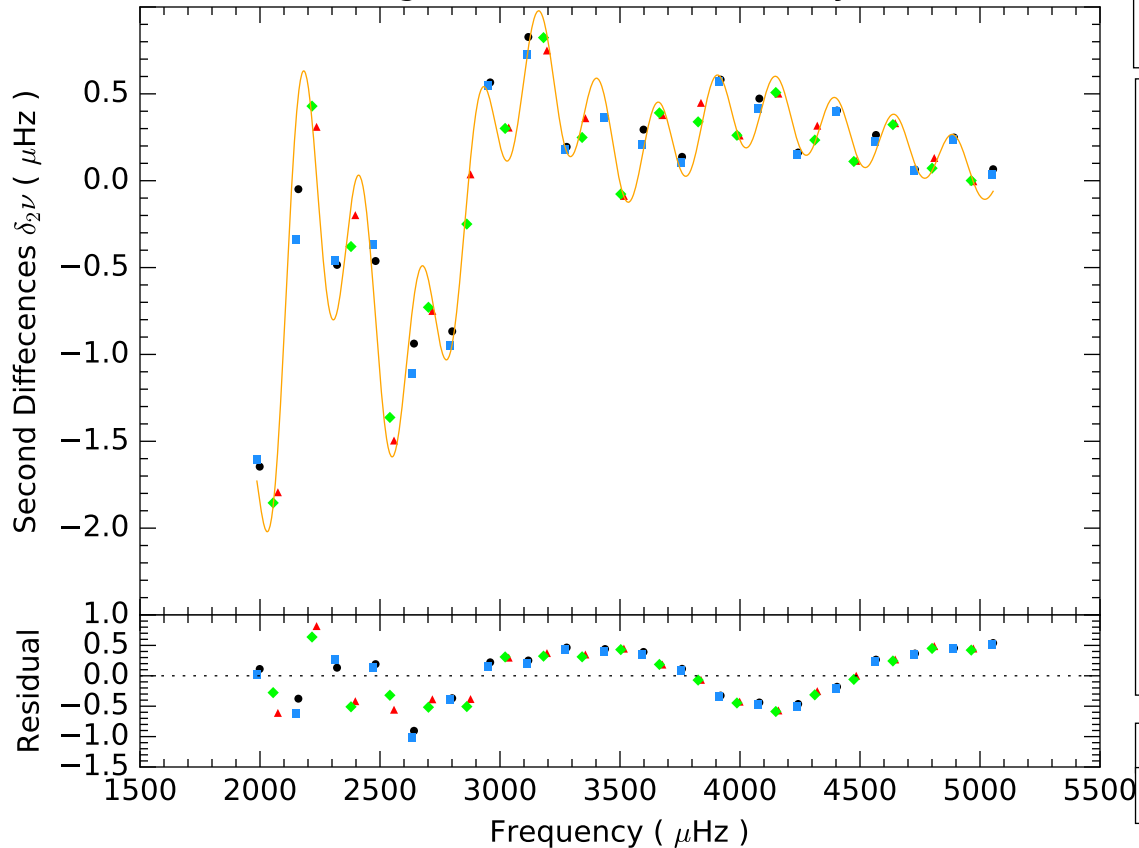
$$\tau_{HI} = 267.4 \text{ s}$$

$$\phi_{HI} = 3.4588$$

profile62

$$\chi^2_\nu(\text{dof} = 64) = 0.19076$$

Age after ZAMS: 15.310 Gyr



- $\ell=0$
- ♦ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -6.4609 \mu\text{Hz}$$

$$a_1 = 0.0032954$$

$$a_2 = -3.9875e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0025736$$

$$c_2 = 3.0589e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 526.82 \text{ s}$$

$$\phi_{\text{HeII}} = 5.8323$$

$$b_2 = 3.5953e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2027.3 \text{ s}$$

$$\phi_{\text{CZ}} = 2.6586$$

$$d_0 = 0.001398$$

$$d_2 = 2.8113e-07 \mu\text{Hz}^{-2}$$

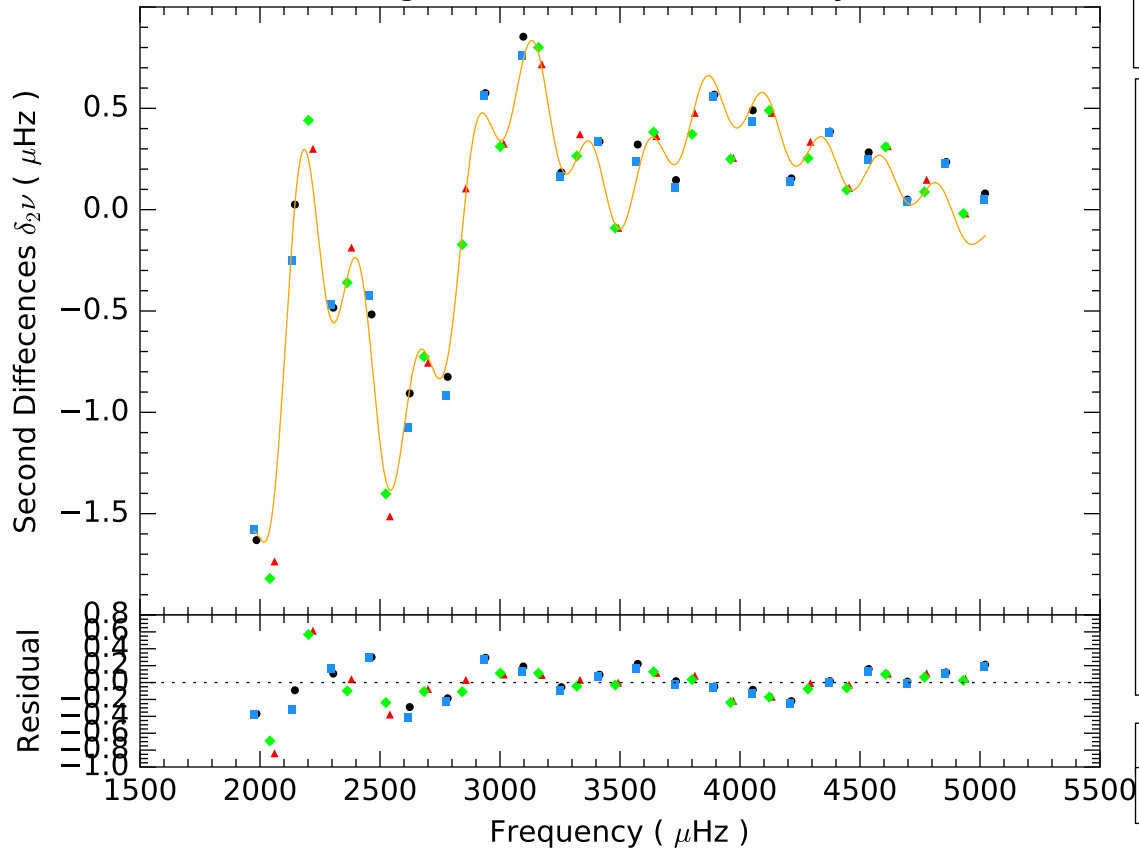
$$\tau_{\text{HI}} = 146.35 \text{ s}$$

$$\phi_{\text{HI}} = 1.9611$$

profile63

$$\chi^2_\nu (\text{dof} = 64) = 0.20388$$

Age after ZAMS: 15.610 Gyr



$$a_0 = -6.4119 \mu\text{Hz}$$

$$a_1 = 0.0034946$$

$$a_2 = -4.483e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0015744$$

$$c_2 = 2.4161e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 562.19 \text{ s}$$

$$\phi_{HeII} = 4.9044$$

$$b_2 = 2.081e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2075.6 \text{ s}$$

$$\phi_{CZ} = 1.3522$$

$$d_0 = 0.003042$$

$$d_2 = 4.934e-07 \mu\text{Hz}^{-2}$$

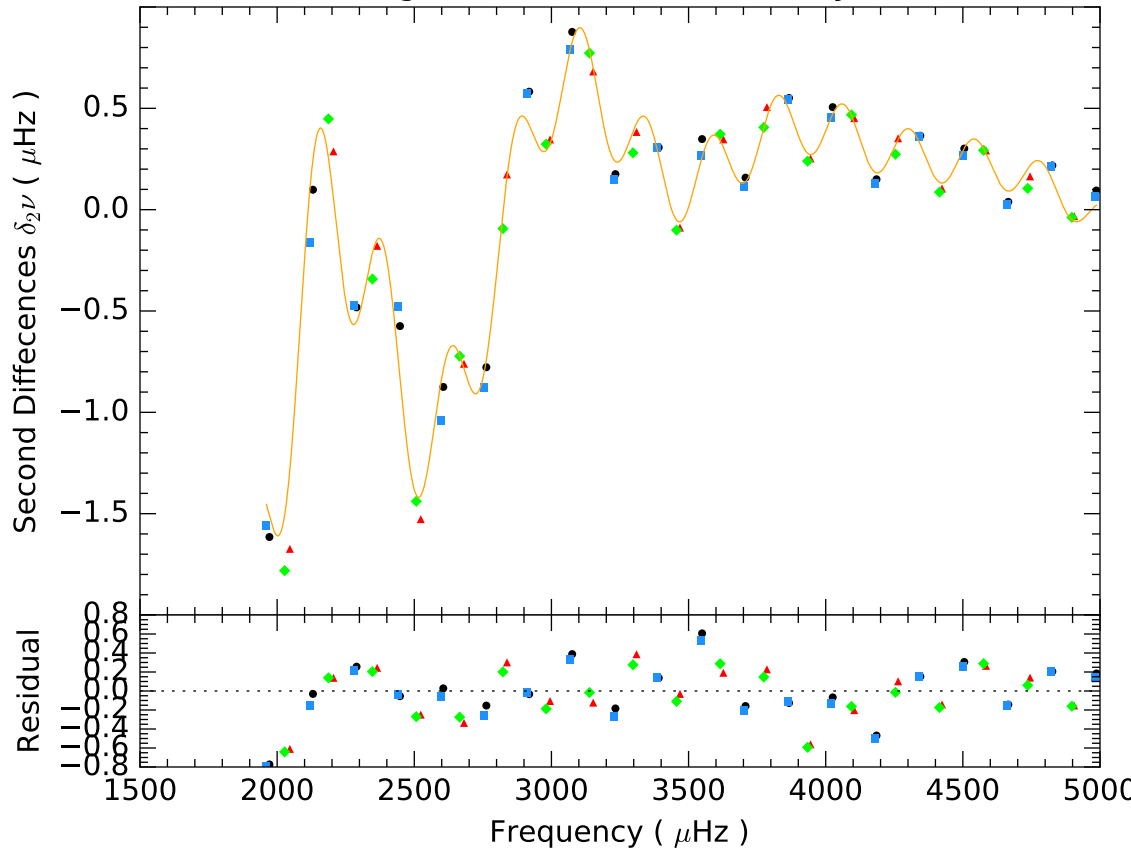
$$\tau_{HI} = 110.27 \text{ s}$$

$$\phi_{HI} = 2.7728$$

profile64

$$\chi^2_\nu(\text{dof} = 64) = 0.061927$$

Age after ZAMS: 15.910 Gyr



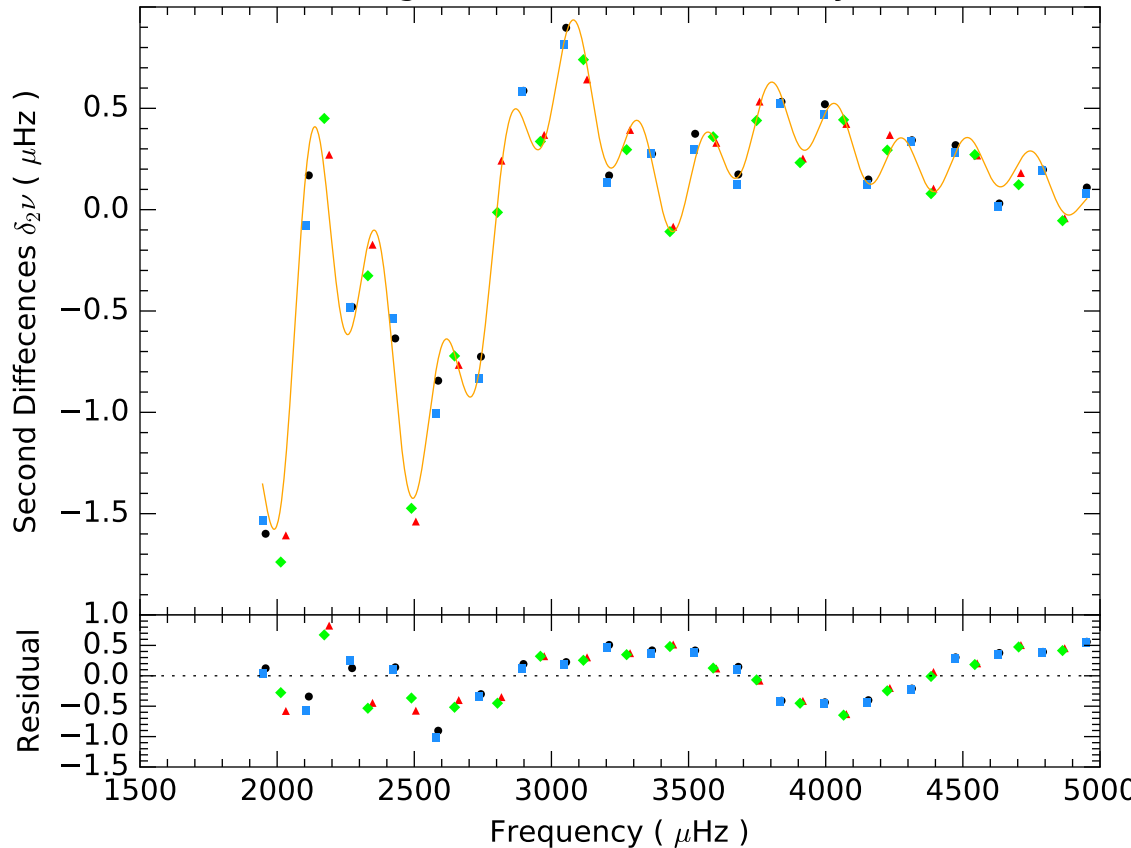
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$a_0 = -6.3332 \mu\text{Hz}$
 $a_1 = 0.0034216$
 $a_2 = -4.3415e-07 \mu\text{Hz}^{-2}$
 $c_0 = 0.001976$
 $c_2 = 2.8371e-07 \mu\text{Hz}^{-2}$
 $\tau_{\text{HeII}} = 566.86 \text{ s}$
 $\phi_{\text{HeII}} = 4.8038$
 $b_2 = 2.3465e+06 \text{ mHz}^3$
 $\tau_{\text{CZ}} = 2090.4 \text{ s}$
 $\phi_{\text{CZ}} = 1.6129$
 $d_0 = 0.0002197$
 $d_2 = 1.4859e-07 \mu\text{Hz}^{-2}$
 $\tau_{\text{HI}} = 249.11 \text{ s}$
 $\phi_{\text{HI}} = 4.5614$

profile65

$\chi^2_{\nu}(\text{dof} = 64) = 0.10005$

Age after ZAMS: 16.210 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -6.2528 \mu \text{ Hz}$$

$$a_1 = 0.0034193$$

$$a_2 = -4.3814e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013798$$

$$c_2 = 2.3925e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 577.9 \text{ s}$$

$$\phi_{\text{HeII}} = 4.6422$$

$$b_2 = 2.4822e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2096.9 \text{ s}$$

$$\phi_{\text{CZ}} = 1.9606$$

$$d_0 = 9.2547e-05$$

$$d_2 = 7.8237e-08 \mu\text{Hz}^{-2}$$

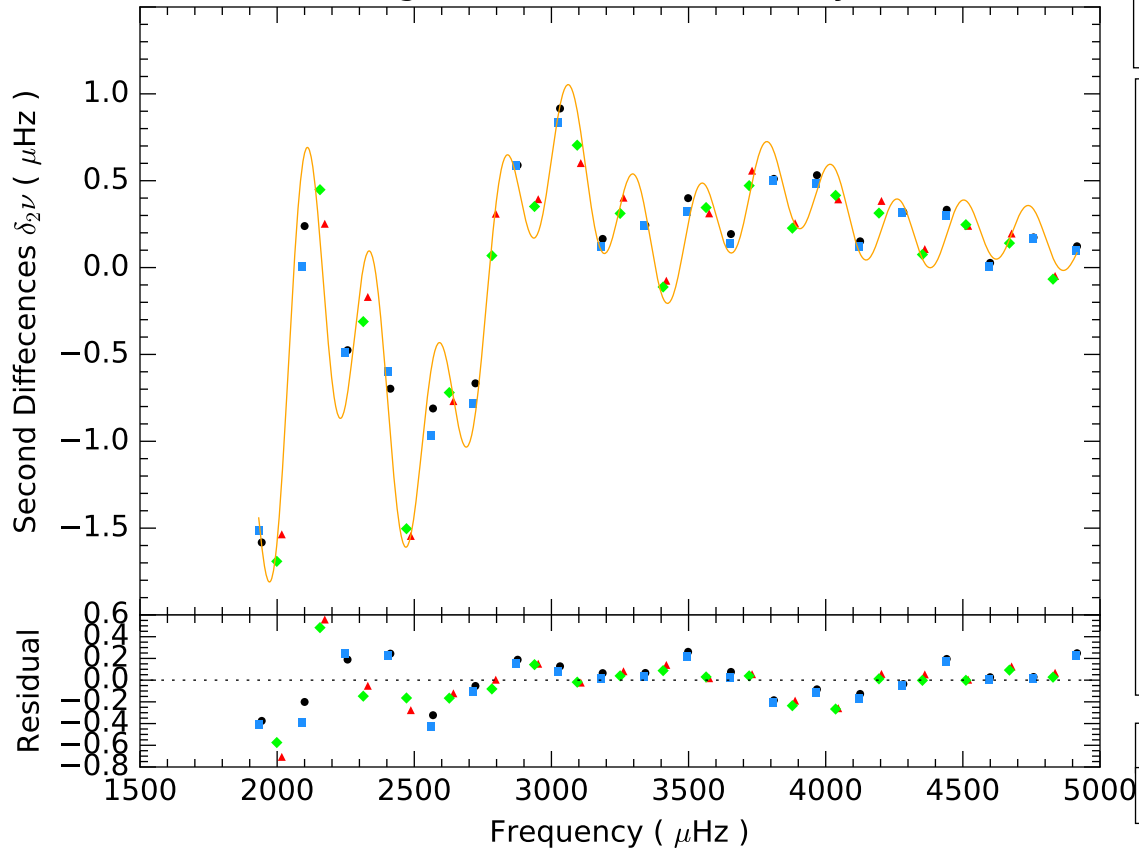
$$\tau_{\text{HI}} = 255.93 \text{ s}$$

$$\phi_{\text{HI}} = 4.2461$$

profile66

$$\chi^2_\nu(\text{dof} = 64) = 0.20439$$

Age after ZAMS: 16.510 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -5.682 \mu\text{Hz}$$

$$a_1 = 0.0030504$$

$$a_2 = -3.8174e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013403$$

$$c_2 = 2.3844e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 572.57 \text{ s}$$

$$\phi_{HeII} = 5.0182$$

$$b_2 = 3.6405e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2087.3 \text{ s}$$

$$\phi_{CZ} = 2.857$$

$$d_0 = 0.00011817$$

$$d_2 = 7.7957e-08 \mu\text{Hz}^{-2}$$

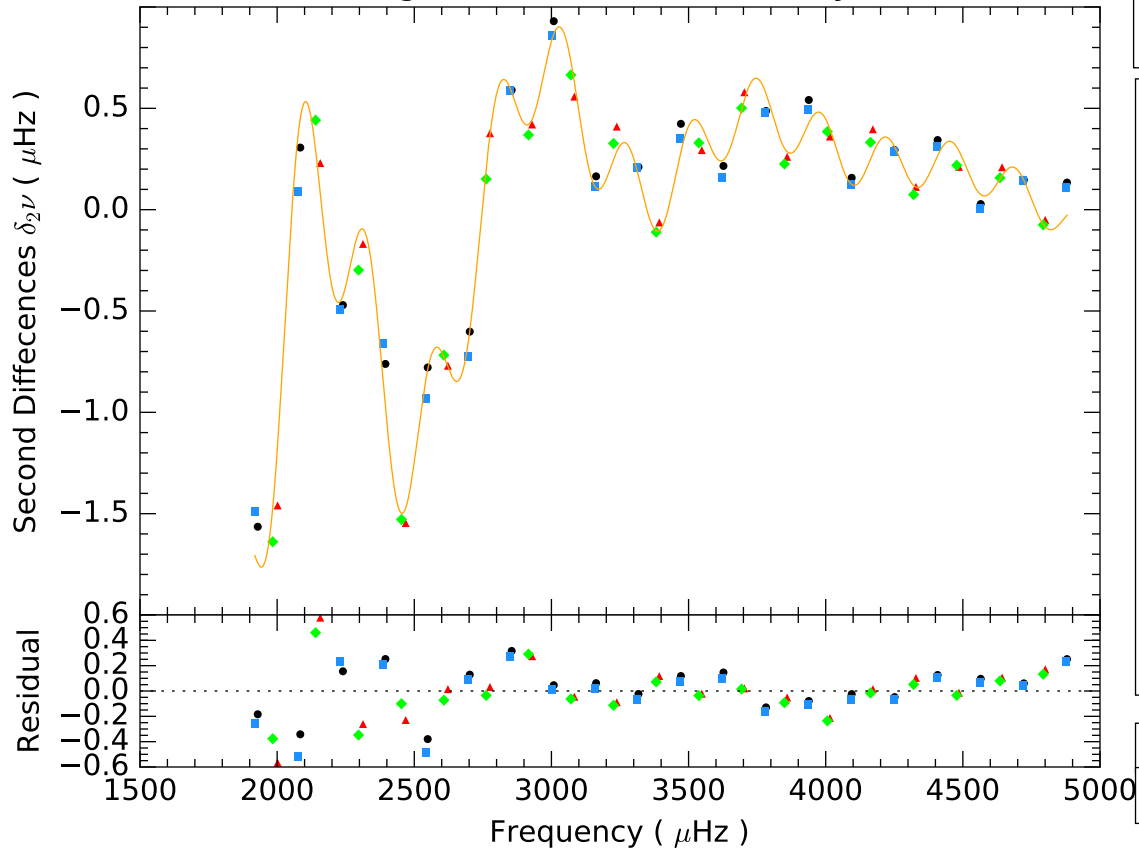
$$\tau_{HI} = 204.98 \text{ s}$$

$$\phi_{HI} = 6.2829$$

profile67

$$\chi^2_\nu(\text{dof} = 64) = 0.053934$$

Age after ZAMS: 16.810 Gyr

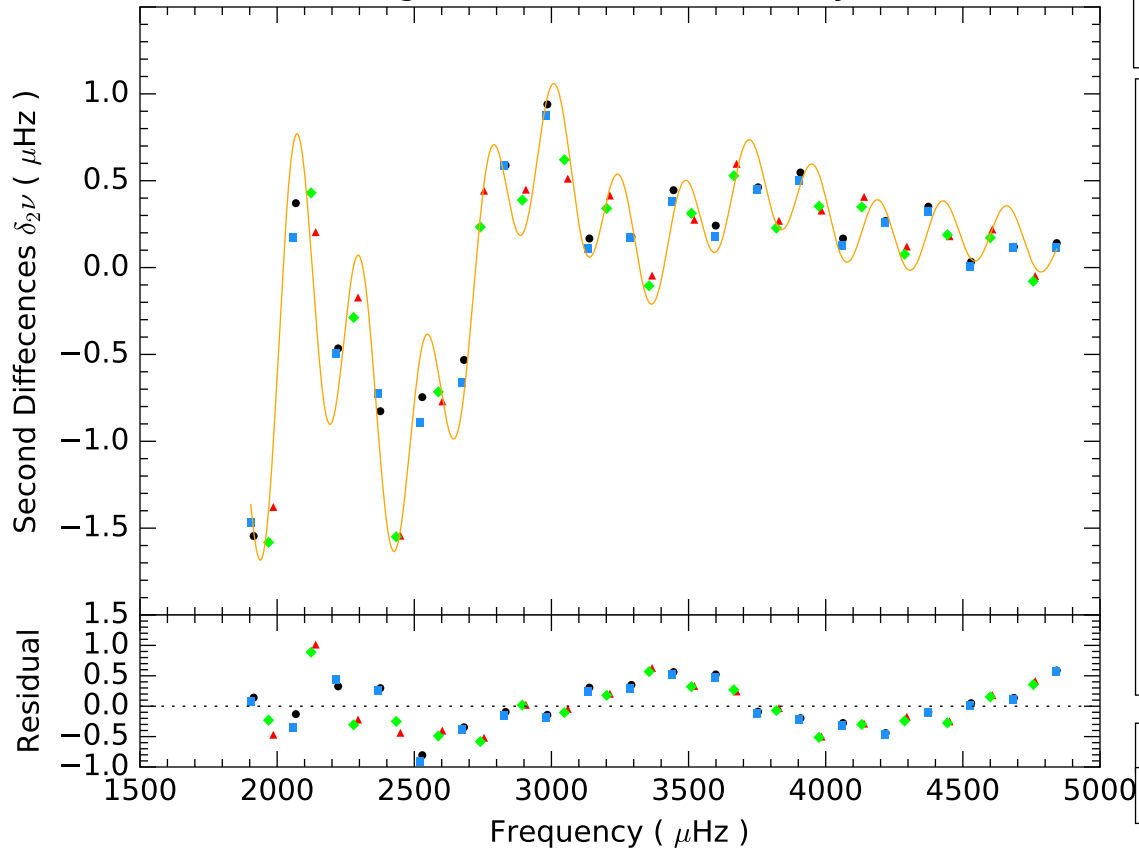


\bullet $\ell=0$	\blacklozenge $\ell=3$
\blacktriangle $\ell=1$	— fit
\blacksquare $\ell=2$	

$a_0 = -6.2121 \mu \text{ Hz}$
$a_1 = 0.0034119$
$a_2 = -4.4066e-07 \mu\text{Hz}^{-2}$
$c_0 = 0.0020755$
$c_2 = 2.8487e-07 \mu\text{Hz}^{-2}$
$\tau_{\text{HeII}} = 606.17 \text{ s}$
$\phi_{\text{HeII}} = 4.14$
$b_2 = 2.2908e+06 \text{ mHz}^3$
$\tau_{\text{CZ}} = 2119.0 \text{ s}$
$\phi_{\text{CZ}} = 2.3348$
$d_0 = 0.00030237$
$d_2 = 1.7704e-07 \mu\text{Hz}^{-2}$
$\tau_{\text{HI}} = 203.88 \text{ s}$
$\phi_{\text{HI}} = 0.21239$

profile68
$\chi^2_\nu(\text{dof} = 64) = 0.050282$

Age after ZAMS: 17.110 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -6.0539 \mu\text{Hz}$$

$$a_1 = 0.0033597$$

$$a_2 = -4.3456e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013487$$

$$c_2 = 2.4545e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 577.71 \text{ s}$$

$$\phi_{\text{HeII}} = 5.256$$

$$b_2 = 3.6001e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2121.7 \text{ s}$$

$$\phi_{\text{CZ}} = 2.9218$$

$$d_0 = 6.515e-05$$

$$d_2 = 3.5827e-08 \mu\text{Hz}^{-2}$$

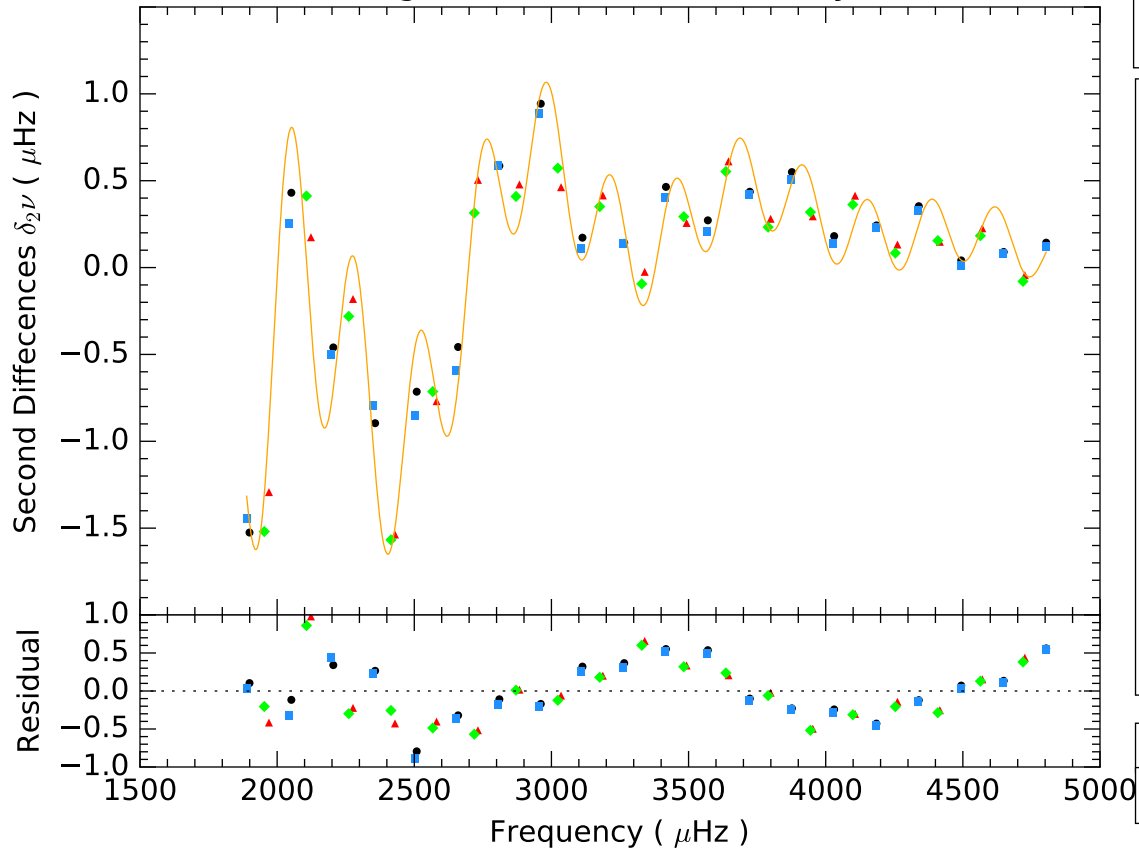
$$\tau_{\text{HI}} = 213.96 \text{ s}$$

$$\phi_{\text{HI}} = 6.282$$

profile69

$$\chi^2_\nu(\text{dof} = 64) = 0.17569$$

Age after ZAMS: 17.410 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -5.6691 \mu\text{Hz}$$

$$a_1 = 0.0032003$$

$$a_2 = -4.2094e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013017$$

$$c_2 = 2.4499e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 585.15 \text{ s}$$

$$\phi_{HeII} = 5.2225$$

$$b_2 = 3.5974e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2140.7 \text{ s}$$

$$\phi_{CZ} = 2.9352$$

$$d_0 = 8.1251e-05$$

$$d_2 = 6.427e-08 \mu\text{Hz}^{-2}$$

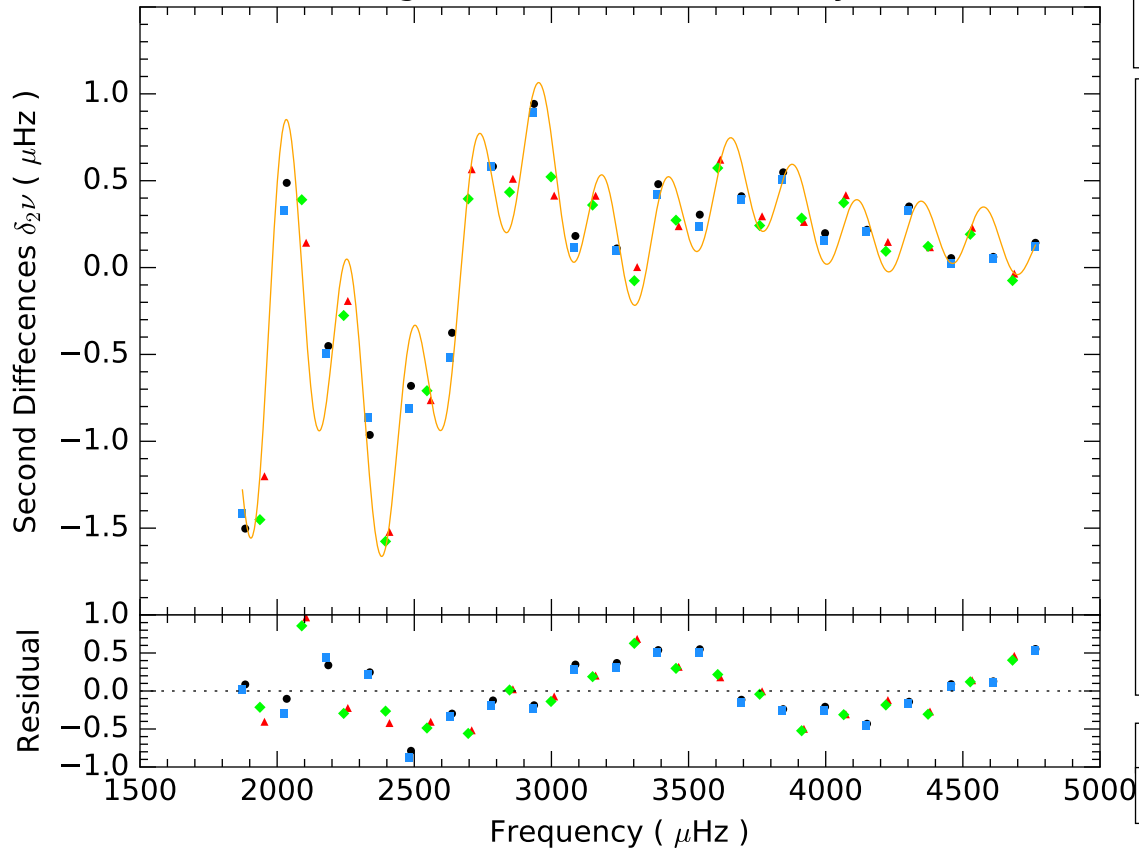
$$\tau_{HI} = 237.7 \text{ s}$$

$$\phi_{HI} = 5.2258$$

profile70

$$\chi^2_\nu(\text{dof} = 64) = 0.17153$$

Age after ZAMS: 17.710 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -5.6566 \mu\text{Hz}$$

$$a_1 = 0.0031977$$

$$a_2 = -4.2046e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0013807$$

$$c_2 = 2.5554e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 586.32 \text{ s}$$

$$\phi_{HeII} = 5.4041$$

$$b_2 = 3.5638e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2160.0 \text{ s}$$

$$\phi_{CZ} = 2.9517$$

$$d_0 = 7.9528e-05$$

$$d_2 = 5.2653e-08 \mu\text{Hz}^{-2}$$

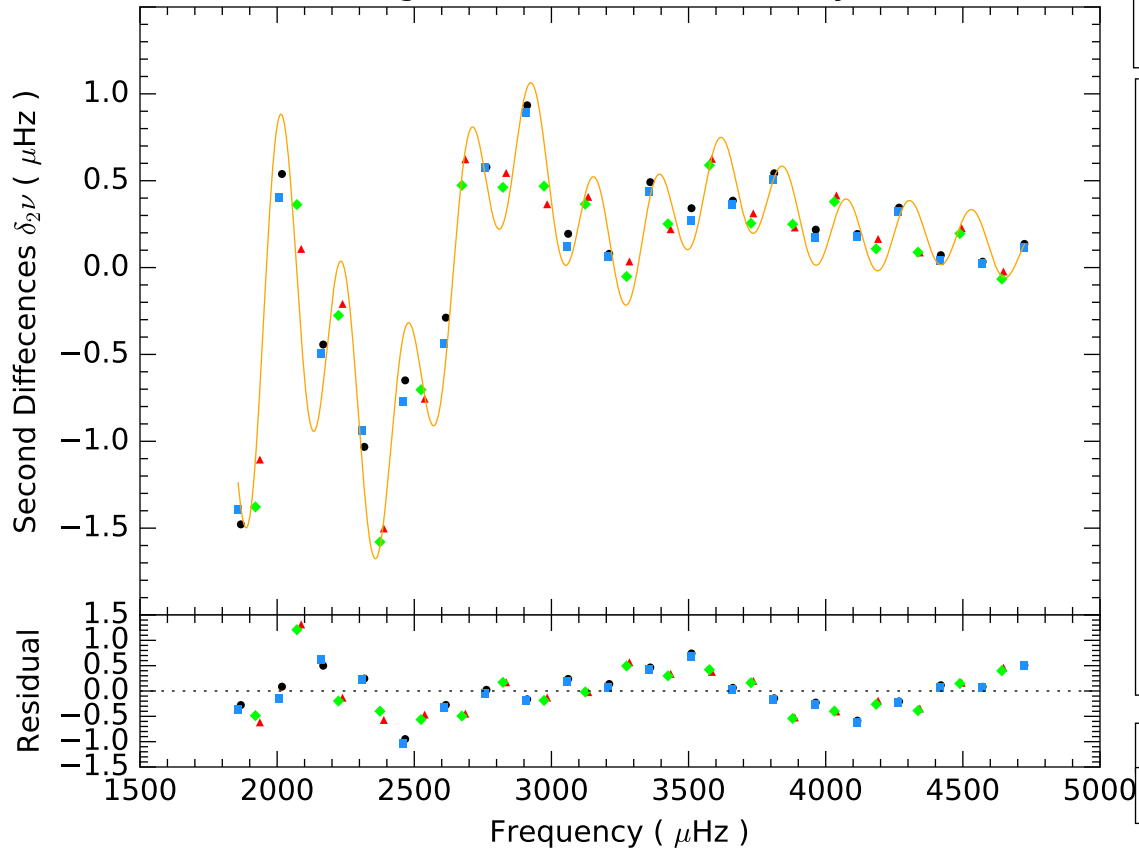
$$\tau_{HI} = 215.33 \text{ s}$$

$$\phi_{HI} = 6.2832$$

profile71

$$\chi^2_\nu(\text{dof} = 64) = 0.17104$$

Age after ZAMS: 18.010 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -3.9203 \mu\text{Hz}$$

$$a_1 = 0.0022269$$

$$a_2 = -2.9245e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0014282$$

$$c_2 = 2.6492e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 597.4 \text{ s}$$

$$\phi_{\text{HeII}} = 5.2602$$

$$b_2 = 3.5102e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2181.3 \text{ s}$$

$$\phi_{\text{CZ}} = 2.9355$$

$$d_0 = 0.00039922$$

$$d_2 = 1.9626e-07 \mu\text{Hz}^{-2}$$

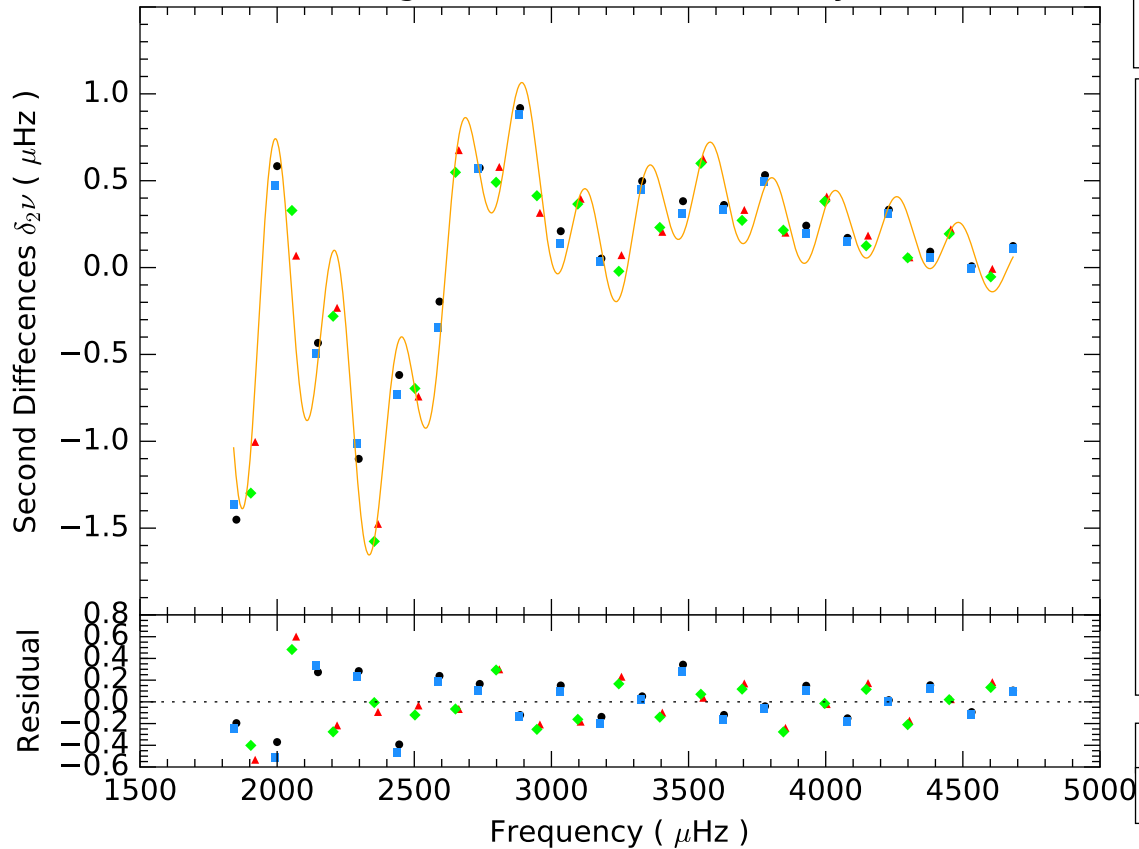
$$\tau_{\text{HI}} = 199.78 \text{ s}$$

$$\phi_{\text{HI}} = 6.2829$$

profile72

$$\chi^2_\nu(\text{dof} = 64) = 0.22732$$

Age after ZAMS: 18.310 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -3.0797 \mu\text{Hz}$$

$$a_1 = 0.0019424$$

$$a_2 = -2.7532e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.001729$$

$$c_2 = 3.0368e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 670.88 \text{ s}$$

$$\phi_{HeII} = 2.902$$

$$b_2 = 3.3191e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2202.4 \text{ s}$$

$$\phi_{CZ} = 2.993$$

$$d_0 = 0.0081201$$

$$d_2 = 6.3059e-07 \mu\text{Hz}^{-2}$$

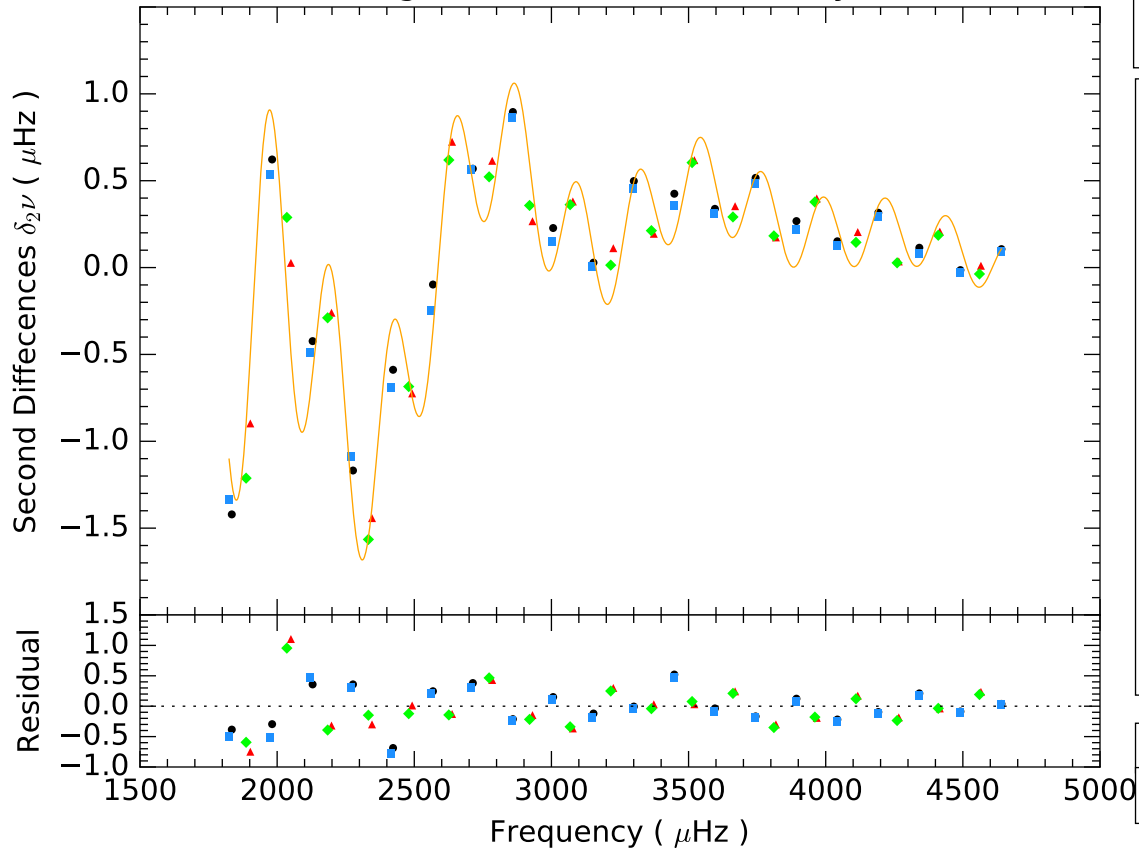
$$\tau_{HI} = 346.59 \text{ s}$$

$$\phi_{HI} = 1.1896$$

profile73

$$\chi^2_\nu(\text{dof} = 64) = 0.060504$$

Age after ZAMS: 18.610 Gyr



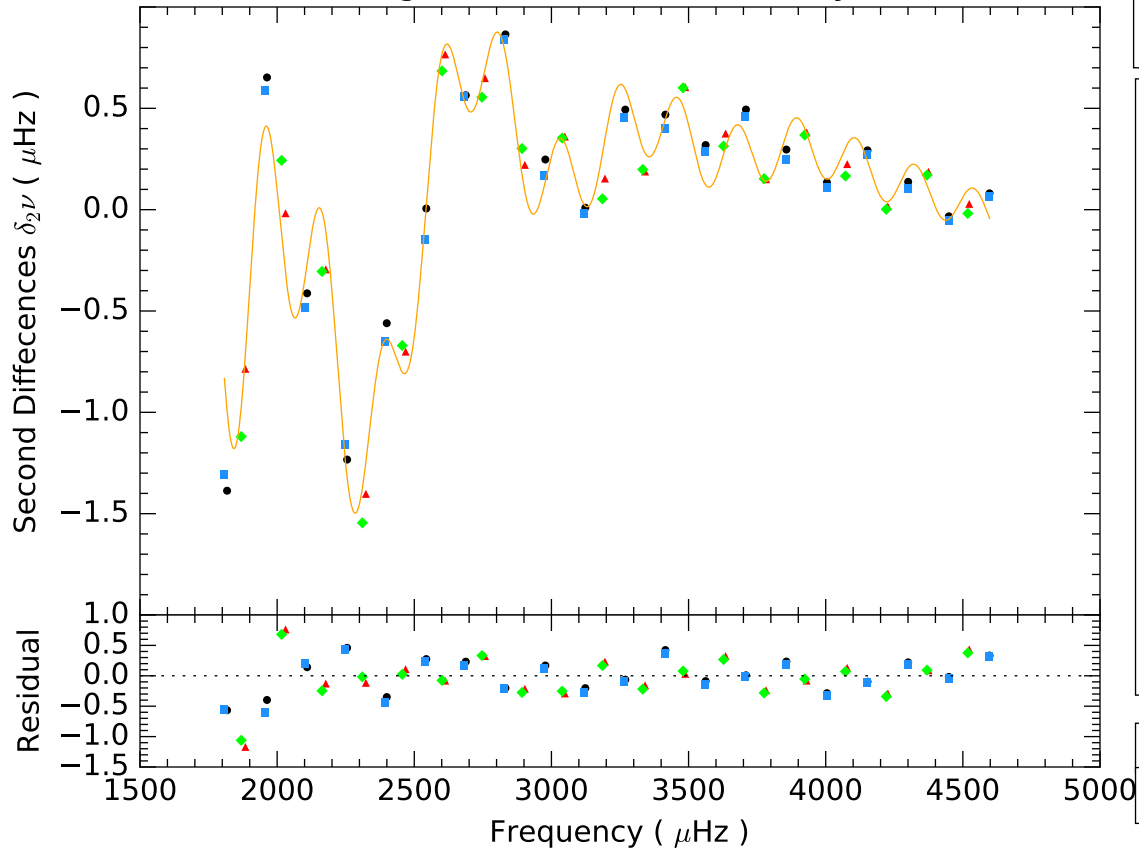
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -2.9082 \mu\text{Hz} \\
 a_1 &= 0.0018415 \\
 a_2 &= -2.6185e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.0014044 \\
 c_2 &= 2.7691e-07 \mu\text{Hz}^{-2} \\
 \tau_{HeII} &= 629.72 \text{ s} \\
 \phi_{HeII} &= 4.6567 \\
 b_2 &= 3.3584e+06 \text{ mHz}^3 \\
 \tau_{CZ} &= 2227.5 \text{ s} \\
 \phi_{CZ} &= 2.9002 \\
 d_0 &= 0.0020763 \\
 d_2 &= 4.4265e-07 \mu\text{Hz}^{-2} \\
 \tau_{HI} &= 259.62 \text{ s} \\
 \phi_{HI} &= 3.9329
 \end{aligned}$$

profile74

$$\chi^2_\nu(\text{dof} = 64) = 0.13621$$

Age after ZAMS: 18.910 Gyr



$$a_0 = -3.0835 \mu\text{Hz}$$

$$a_1 = 0.0019931$$

$$a_2 = -2.896e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0020296$$

$$c_2 = 3.512e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 783.96 \text{ s}$$

$$\phi_{\text{HeII}} = 6.2832$$

$$b_2 = 2.1562e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2319.4 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1641$$

$$d_0 = 0.0067324$$

$$d_2 = 5.8951e-07 \mu\text{Hz}^{-2}$$

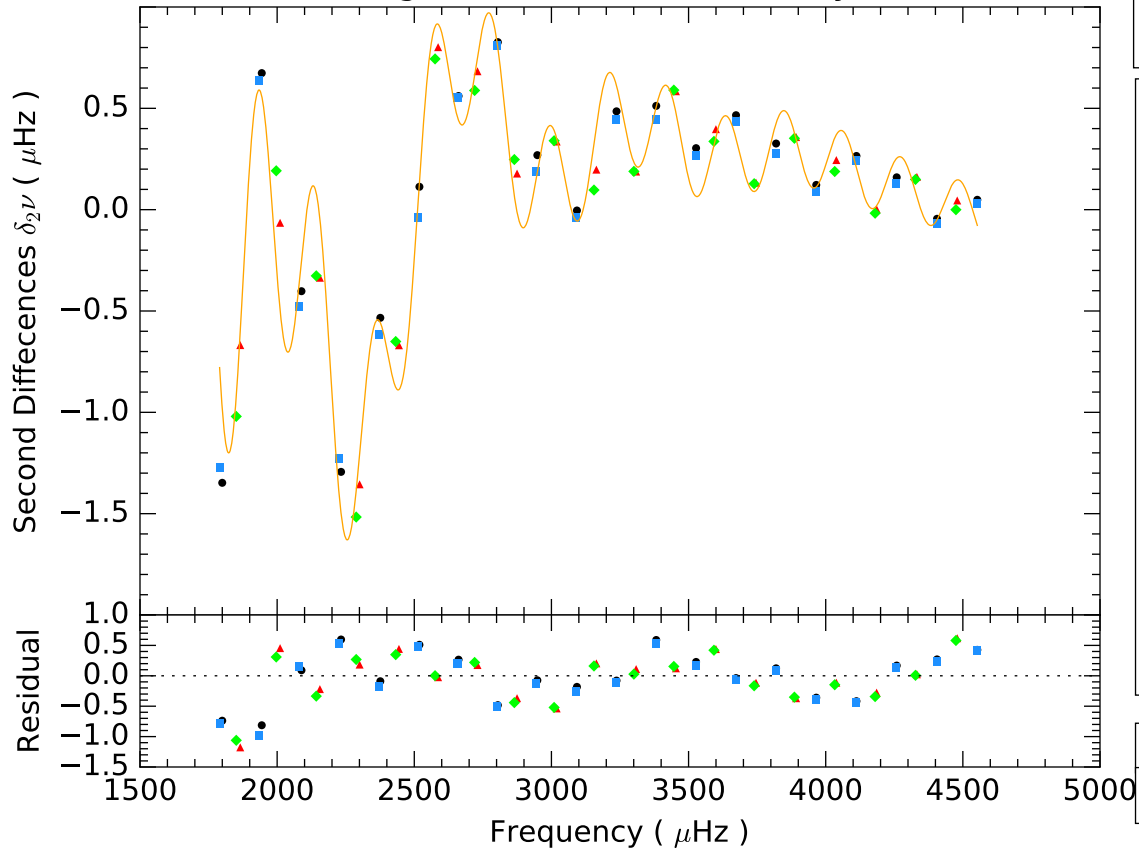
$$\tau_{\text{HI}} = 391.58 \text{ s}$$

$$\phi_{\text{HI}} = 0.0076008$$

profile75

$$\chi^2_{\nu}(\text{dof} = 64) = 0.13327$$

Age after ZAMS: 19.210 Gyr



- $\ell=0$
- ◆ $\ell=3$
- ▲ $\ell=1$
- fit
- $\ell=2$

$$a_0 = -2.7504 \mu \text{ Hz}$$

$$a_1 = 0.0018345$$

$$a_2 = -2.7193e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0021879$$

$$c_2 = 3.6506e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{He II}} = 792.34 \text{ s}$$

$$\phi_{\text{He II}} = 6.2832$$

$$b_2 = 2.7278e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2347.1 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1796$$

$$d_0 = 0.010433$$

$$d_2 = 6.6969e-07 \mu\text{Hz}^{-2}$$

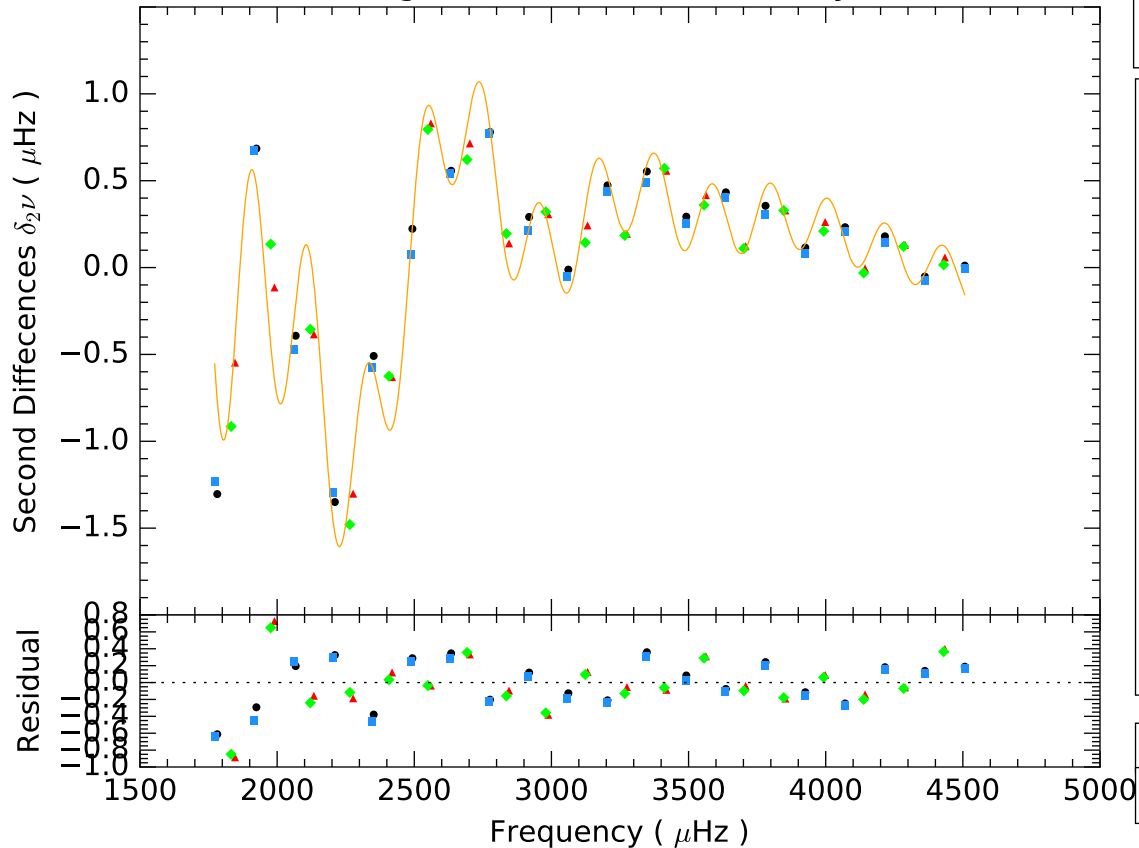
$$\tau_{\text{HI}} = 396.41 \text{ s}$$

$$\phi_{\text{HI}} = 8.1081e-05$$

profile76

$$\chi^2_{\nu}(\text{dof} = 64) = 0.19945$$

Age after ZAMS: 19.510 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- — fit

$$a_0 = -3.0823 \mu\text{Hz}$$

$$a_1 = 0.0020554$$

$$a_2 = -3.0762e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0025757$$

$$c_2 = 3.8492e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 795.38 \text{ s}$$

$$\phi_{HeII} = 6.2823$$

$$b_2 = 2.7166e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2378.7 \text{ s}$$

$$\phi_{CZ} = 1.138$$

$$d_0 = 0.013816$$

$$d_2 = 7.1942e-07 \mu\text{Hz}^{-2}$$

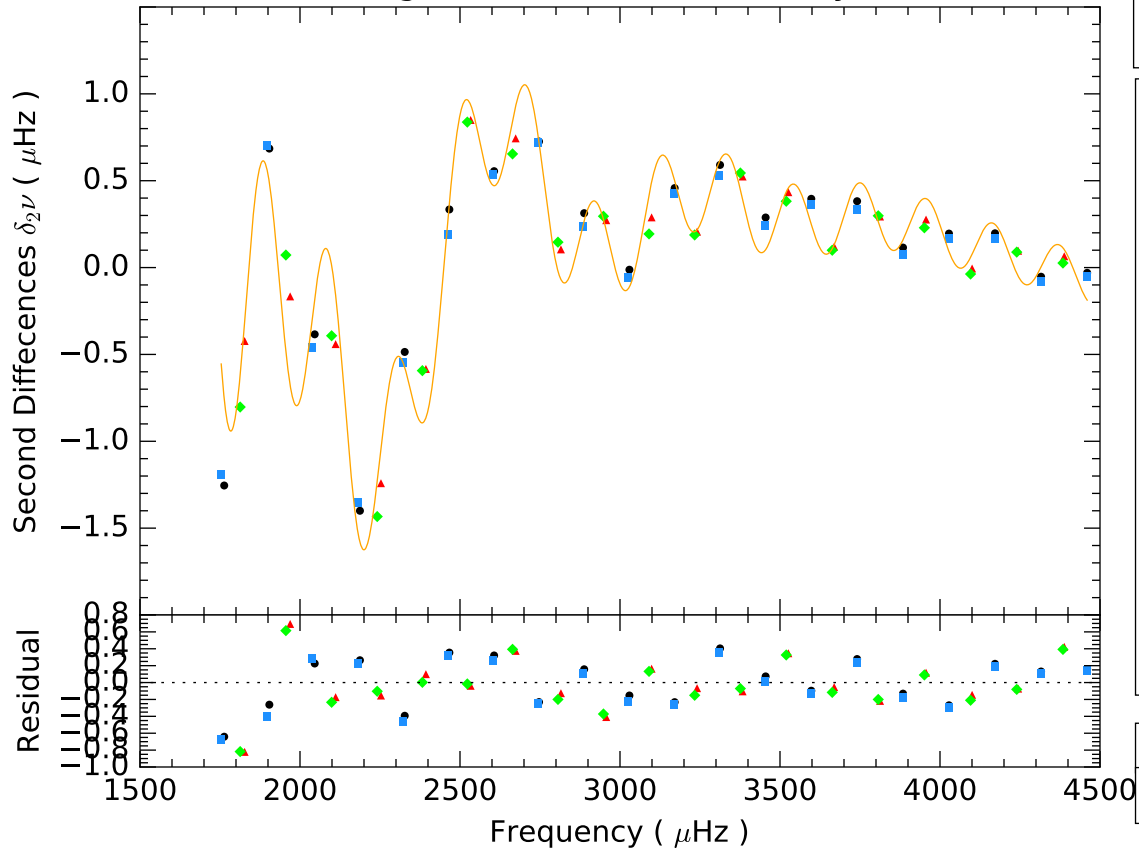
$$\tau_{HI} = 461.14 \text{ s}$$

$$\phi_{HI} = 4.7377$$

profile77

$$\chi^2_\nu(\text{dof} = 64) = 0.10697$$

Age after ZAMS: 19.810 Gyr



$$a_0 = -2.9342 \mu\text{Hz}$$

$$a_1 = 0.0020001$$

$$a_2 = -3.0457e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0025336$$

$$c_2 = 3.9308e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 807.21 \text{ s}$$

$$\phi_{HeII} = 6.2828$$

$$b_2 = 2.6852e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2411.3 \text{ s}$$

$$\phi_{CZ} = 1.0344$$

$$d_0 = 0.015012$$

$$d_2 = 7.5378e-07 \mu\text{Hz}^{-2}$$

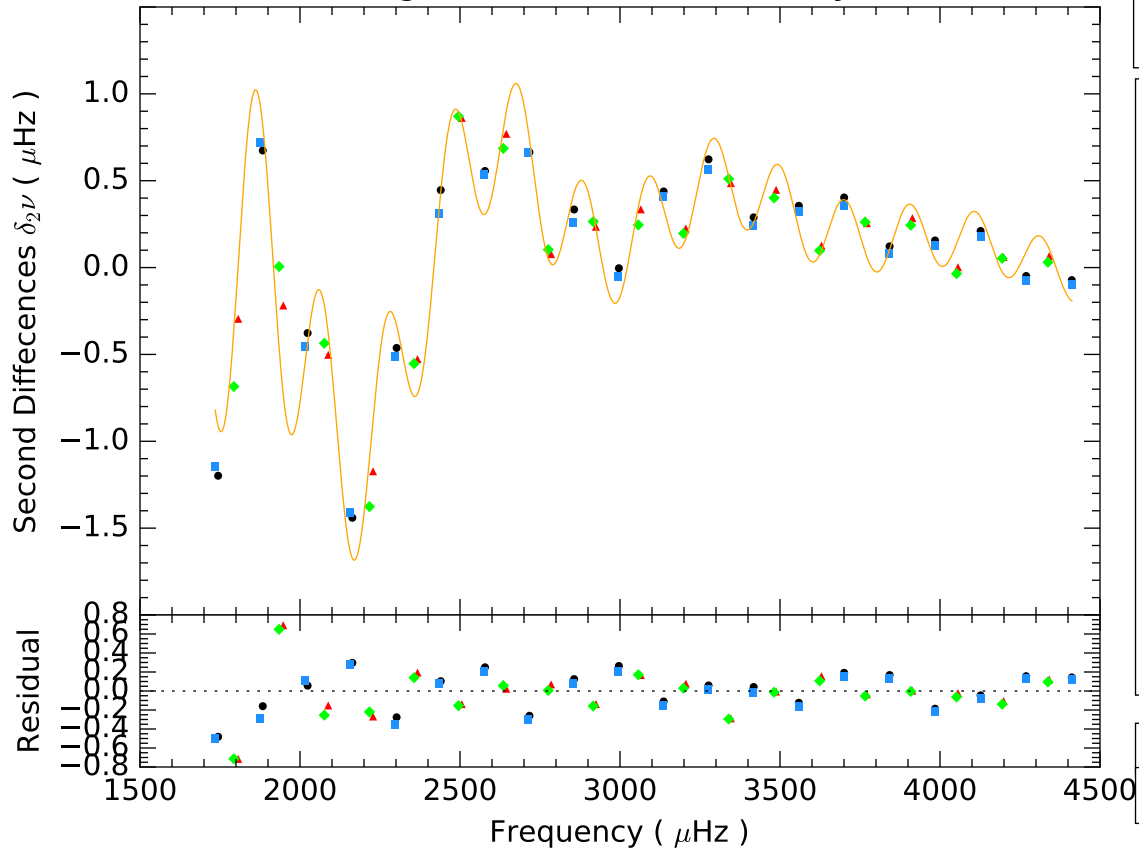
$$\tau_{HI} = 461.59 \text{ s}$$

$$\phi_{HI} = 4.8827$$

profile78

$$\chi^2_\nu(\text{dof} = 64) = 0.11101$$

Age after ZAMS: 20.110 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -4.7906 \mu\text{Hz}$$

$$a_1 = 0.0030314$$

$$a_2 = -4.4419e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0018187$$

$$c_2 = 3.3082e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 647.39 \text{ s}$$

$$\phi_{HeII} = 5.5412$$

$$b_2 = 2.8201e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2449.3 \text{ s}$$

$$\phi_{CZ} = 0.74709$$

$$d_0 = 0.0001398$$

$$d_2 = 1.2239e-07 \mu\text{Hz}^{-2}$$

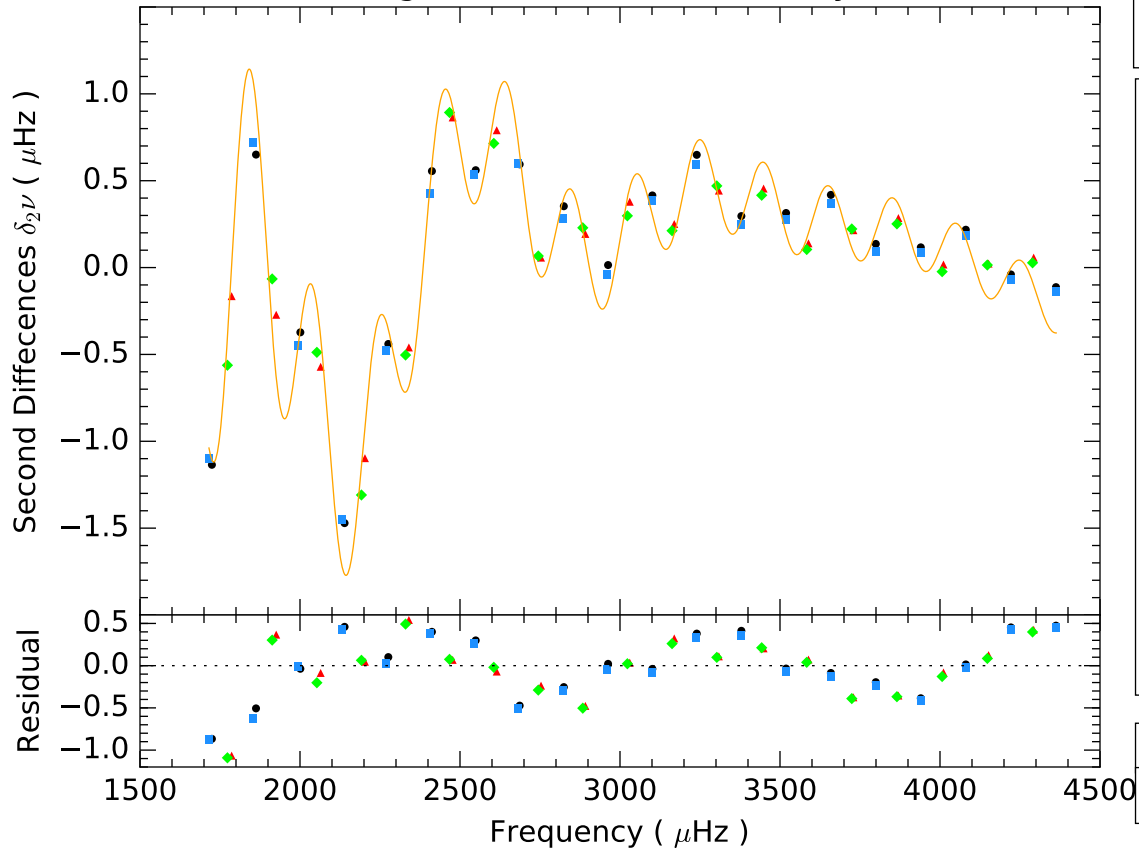
$$\tau_{HI} = 237.71 \text{ s}$$

$$\phi_{HI} = 6.0517$$

profile79

$$\chi^2_\nu(\text{dof} = 64) = 0.068135$$

Age after ZAMS: 20.410 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -4.8059 \mu\text{Hz}$$

$$a_1 = 0.0031941$$

$$a_2 = -4.9156e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0028935$$

$$c_2 = 4.0846e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 685.89 \text{ s}$$

$$\phi_{HeII} = 4.5924$$

$$b_2 = 2.8261e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2487.9 \text{ s}$$

$$\phi_{CZ} = 0.50833$$

$$d_0 = 0.0010897$$

$$d_2 = 4.4993e-07 \mu\text{Hz}^{-2}$$

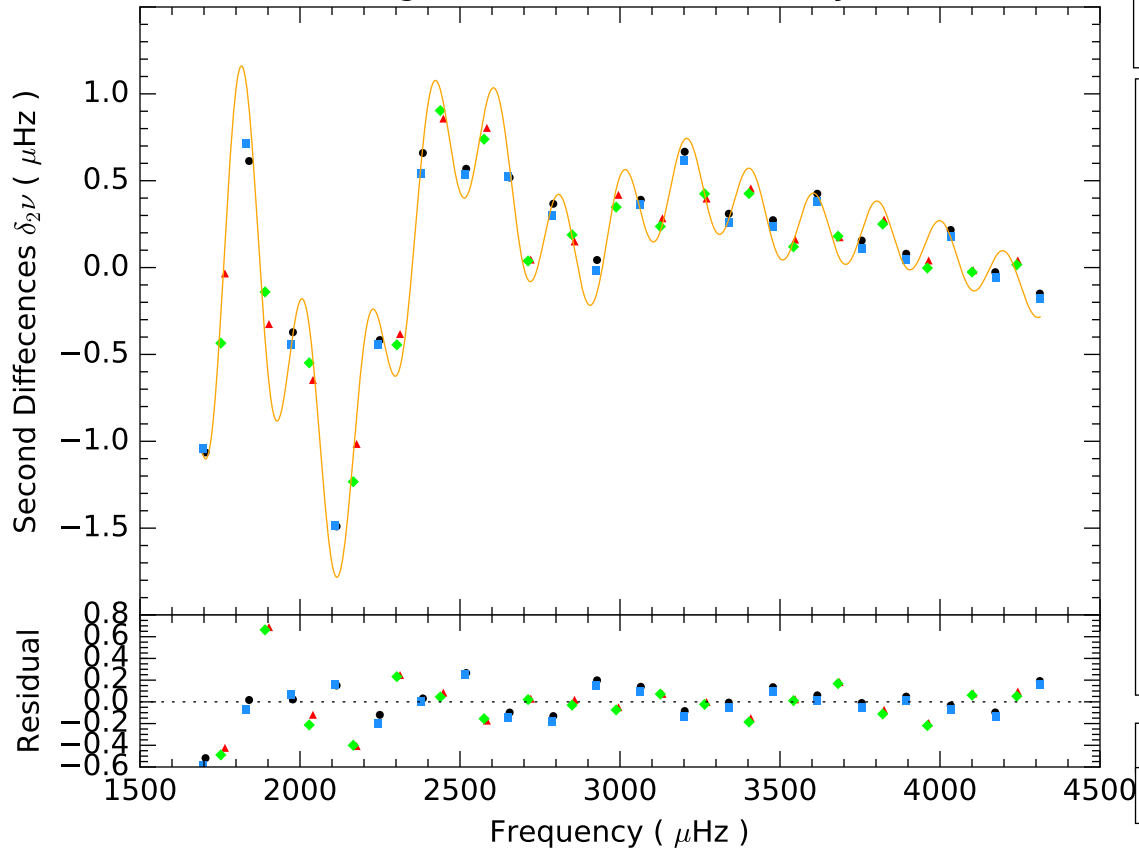
$$\tau_{HI} = 359.18 \text{ s}$$

$$\phi_{HI} = 2.534$$

profile80

$$\chi^2_\nu(\text{dof} = 64) = 0.16413$$

Age after ZAMS: 20.710 Gyr



$$a_0 = -3.8289 \mu\text{Hz}$$

$$a_1 = 0.0025823$$

$$a_2 = -4.007e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0030983$$

$$c_2 = 4.1524e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 687.99 \text{ s}$$

$$\phi_{HeII} = 4.9263$$

$$b_2 = 2.6676e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2518.1 \text{ s}$$

$$\phi_{CZ} = 0.56309$$

$$d_0 = 0.0033311$$

$$d_2 = 5.8746e-07 \mu\text{Hz}^{-2}$$

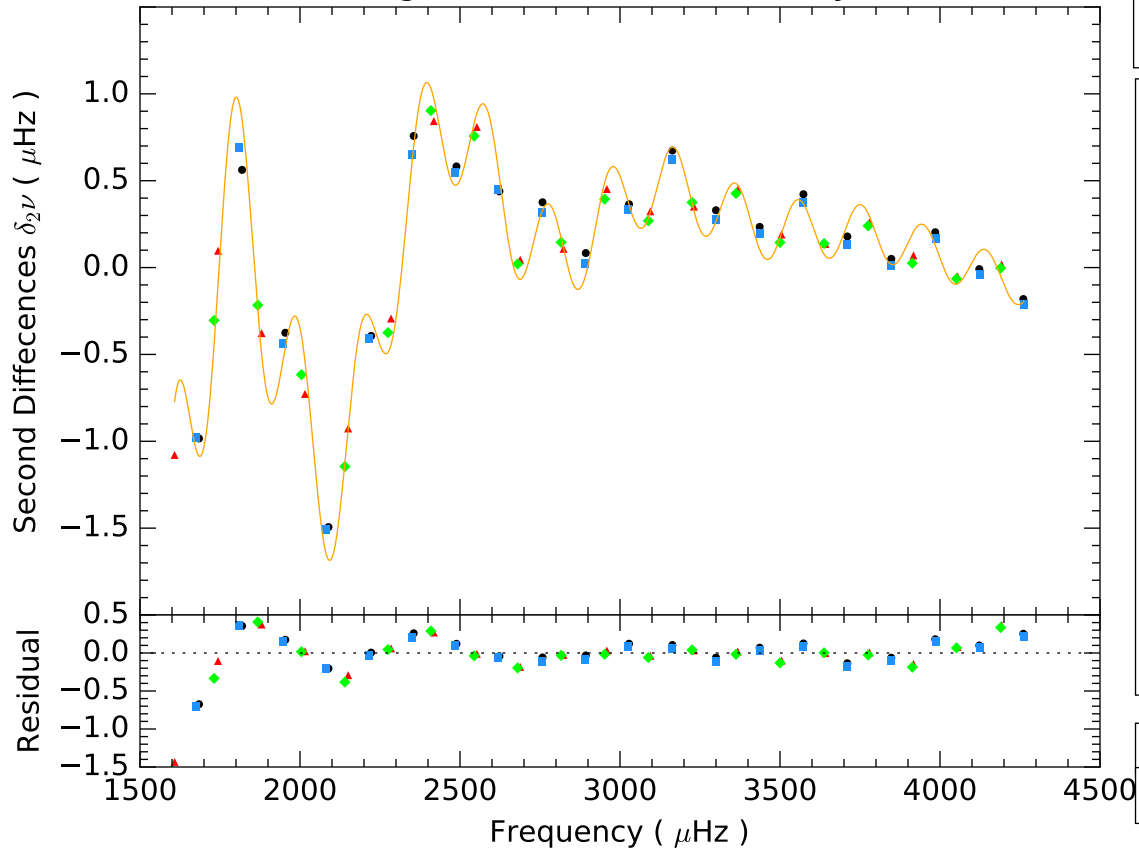
$$\tau_{HI} = 160.3 \text{ s}$$

$$\phi_{HI} = 1.8901$$

profile81

$$\chi^2_\nu(\text{dof} = 64) = 0.052384$$

Age after ZAMS: 21.010 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- — fit

$$a_0 = -2.4584 \mu \text{ Hz}$$

$$a_1 = 0.0018269$$

$$a_2 = -2.9881e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0031127$$

$$c_2 = 4.3134e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 726.9 \text{ s}$$

$$\phi_{HeII} = 4.091$$

$$b_2 = 2.2061e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2563.9 \text{ s}$$

$$\phi_{CZ} = 0.06055$$

$$d_0 = 0.0050666$$

$$d_2 = 7.0086e-07 \mu\text{Hz}^{-2}$$

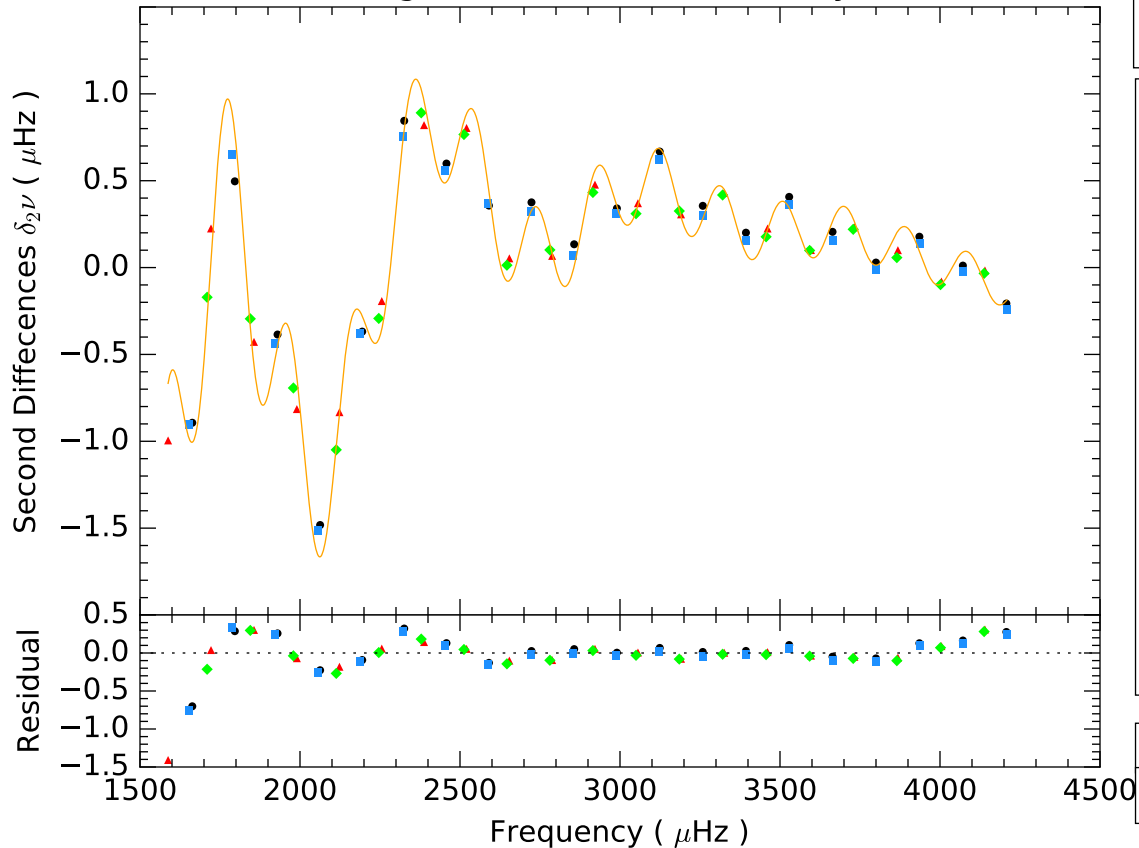
$$\tau_{HI} = 212.51 \text{ s}$$

$$\phi_{HI} = 6.2827$$

profile82

$$\chi^2_\nu(\text{dof} = 65) = 0.079177$$

Age after ZAMS: 21.310 Gyr



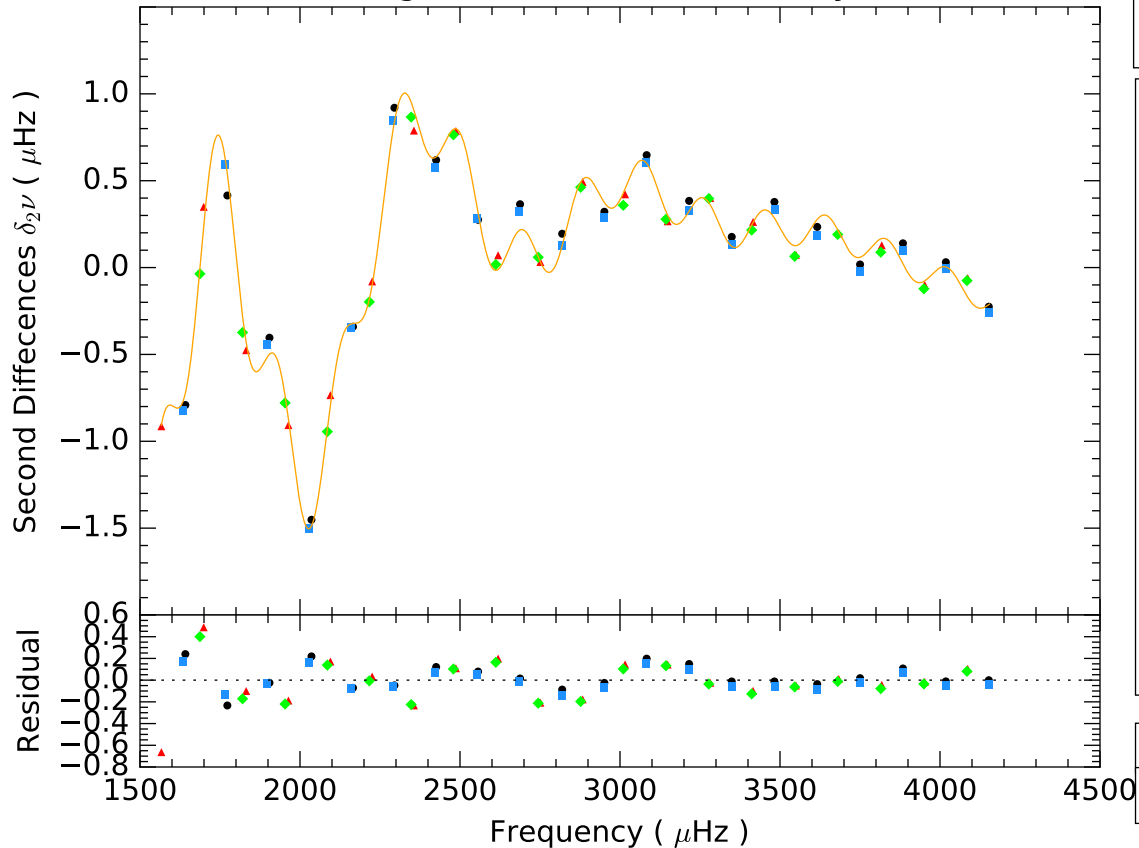
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$a_0 = -2.1698 \mu\text{Hz}$
 $a_1 = 0.0016983$
 $a_2 = -2.8718e-07 \mu\text{Hz}^{-2}$
 $c_0 = 0.0031335$
 $c_2 = 4.4222e-07 \mu\text{Hz}^{-2}$
 $\tau_{HeII} = 738.88 \text{ s}$
 $\phi_{HeII} = 4.1015$
 $b_2 = 2.0761e+06 \text{ mHz}^3$
 $\tau_{CZ} = 2597.4 \text{ s}$
 $\phi_{CZ} = 0.16316$
 $d_0 = 0.0065867$
 $d_2 = 7.833e-07 \mu\text{Hz}^{-2}$
 $\tau_{HI} = 211.17 \text{ s}$
 $\phi_{HI} = 6.2829$

profile83

$\chi^2_\nu(\text{dof} = 65) = 0.072309$

Age after ZAMS: 21.610 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -3.2639 \mu\text{Hz}$$

$$a_1 = 0.0024048$$

$$a_2 = -4.0043e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0032094$$

$$c_2 = 4.5179e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 757.32 \text{ s}$$

$$\phi_{\text{HeII}} = 3.9596$$

$$b_2 = 1.2796e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2636.3 \text{ s}$$

$$\phi_{\text{CZ}} = 0.27695$$

$$d_0 = 0.0043545$$

$$d_2 = 7.4945e-07 \mu\text{Hz}^{-2}$$

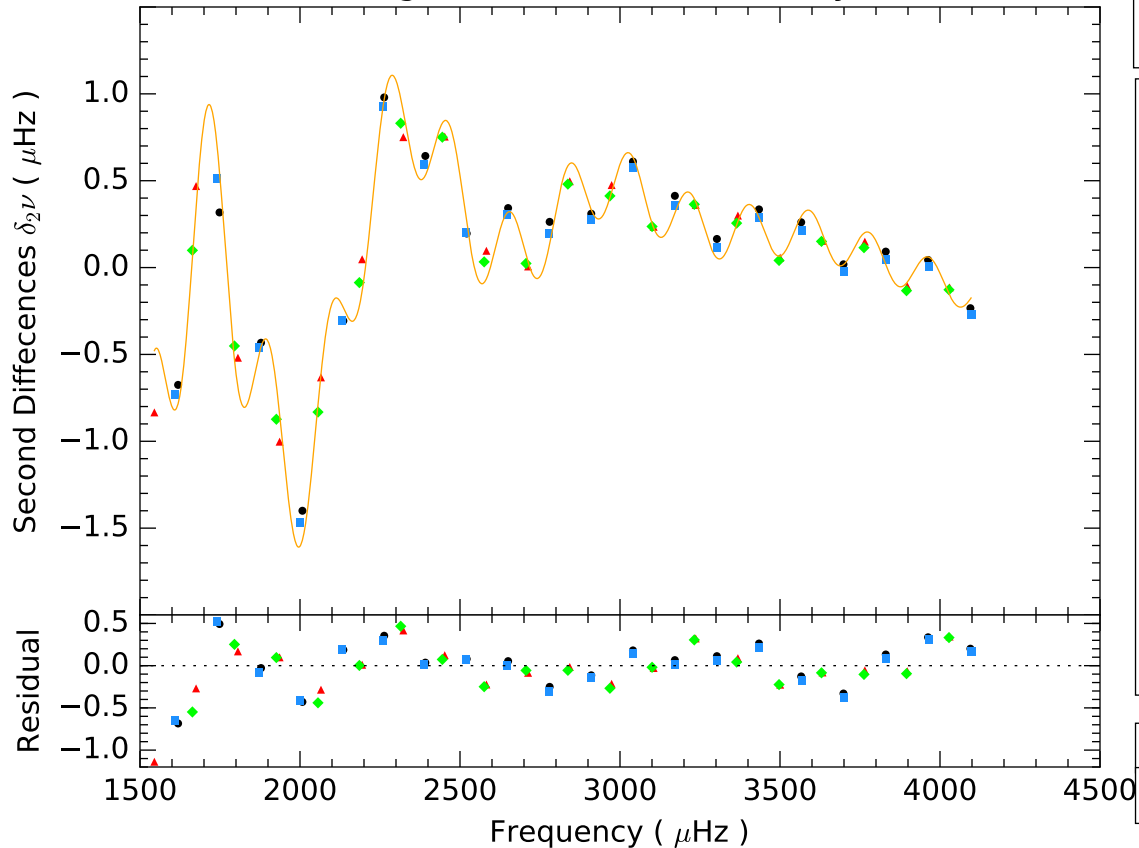
$$\tau_{\text{HI}} = 271.82 \text{ s}$$

$$\phi_{\text{HI}} = 5.1488$$

profile84

$$\chi^2_\nu(\text{dof} = 65) = 0.029799$$

Age after ZAMS: 21.910 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -2.1533 \mu\text{Hz}$$

$$a_1 = 0.0017523$$

$$a_2 = -3.0789e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.003135$$

$$c_2 = 4.6671e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 765.58 \text{ s}$$

$$\phi_{HeII} = 4.1289$$

$$b_2 = 1.7898e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2670.8 \text{ s}$$

$$\phi_{CZ} = 0.43257$$

$$d_0 = 0.0059849$$

$$d_2 = 8.1108e-07 \mu\text{Hz}^{-2}$$

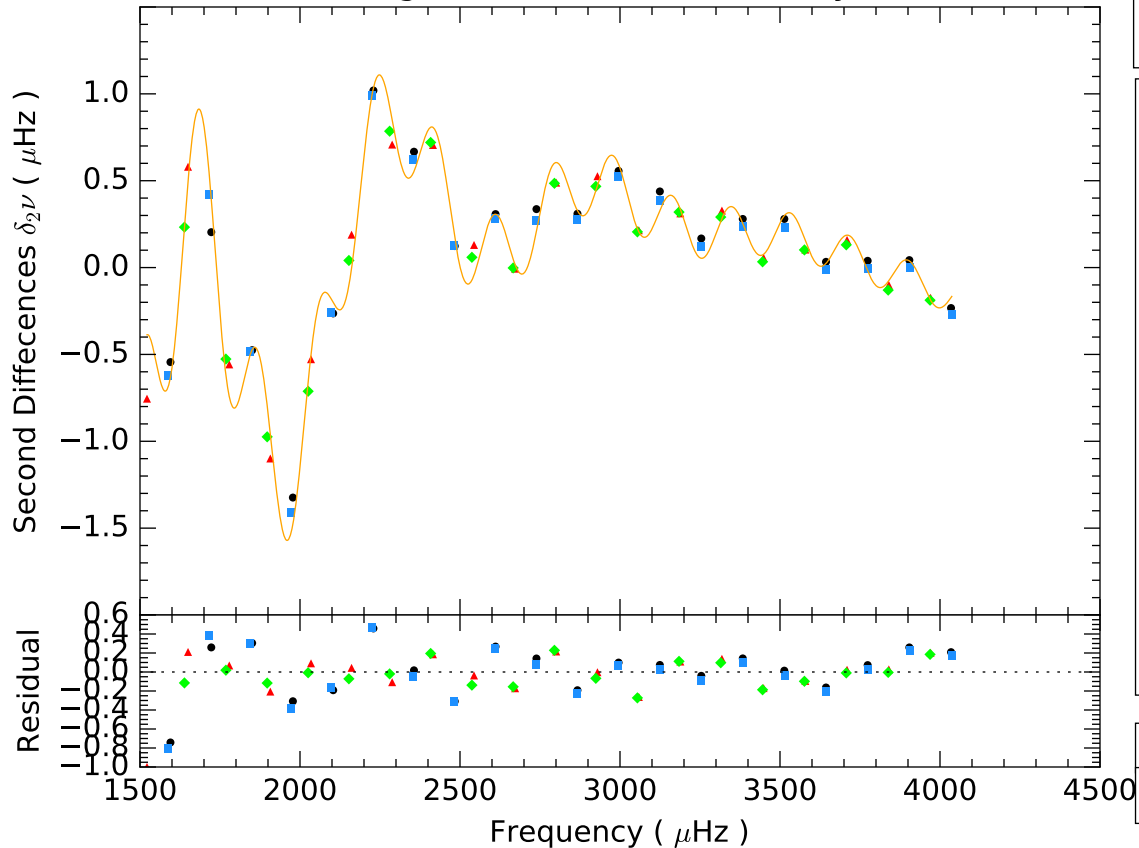
$$\tau_{HI} = 219.37 \text{ s}$$

$$\phi_{HI} = 6.2829$$

profile85

$$\chi^2_\nu(\text{dof} = 65) = 0.097523$$

Age after ZAMS: 22.210 Gyr



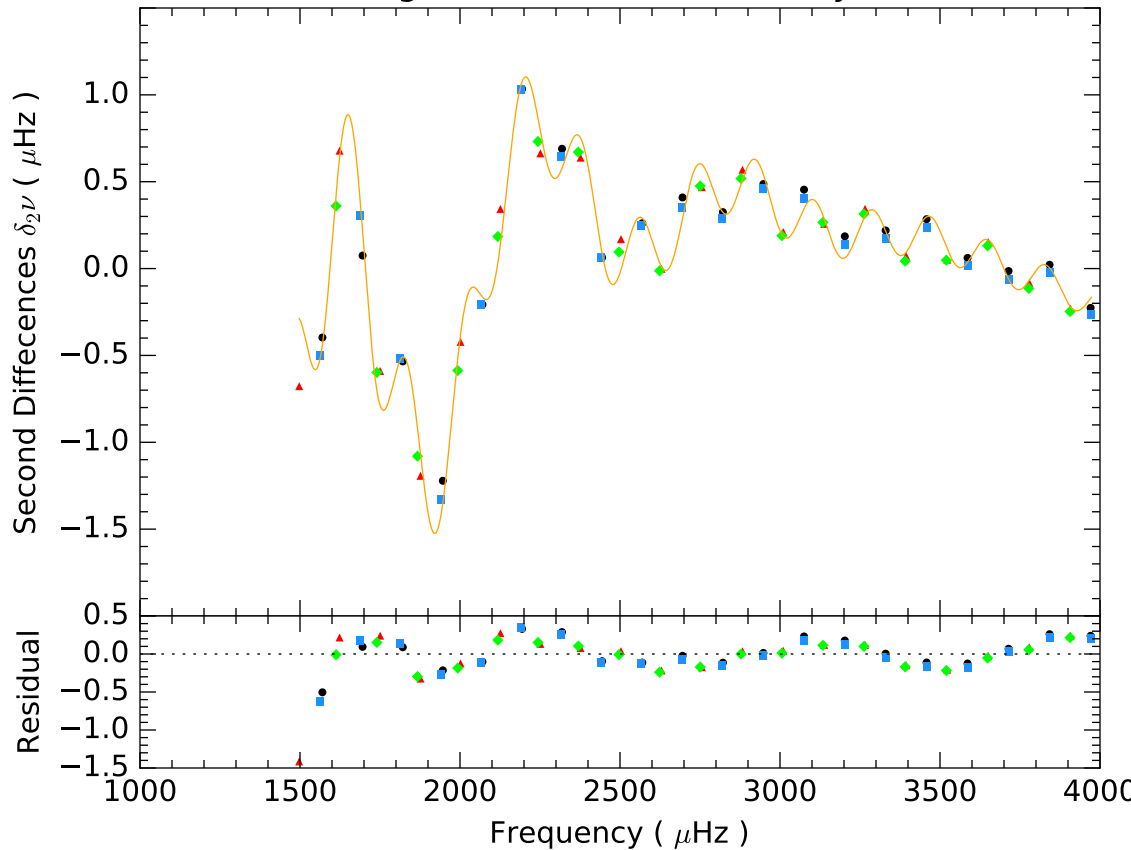
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -1.9867 \mu\text{Hz} \\
 a_1 &= 0.001692 \\
 a_2 &= -3.0694e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.003132 \\
 c_2 &= 4.8075e-07 \mu\text{Hz}^{-2} \\
 \tau_{HeII} &= 779.18 \text{ s} \\
 \phi_{HeII} &= 4.1828 \\
 b_2 &= 1.6315e+06 \text{ mHz}^3 \\
 \tau_{CZ} &= 2711.7 \text{ s} \\
 \phi_{CZ} &= 0.60744 \\
 d_0 &= 0.006832 \\
 d_2 &= 8.7648e-07 \mu\text{Hz}^{-2} \\
 \tau_{HI} &= 220.2 \text{ s} \\
 \phi_{HI} &= 6.283
 \end{aligned}$$

profile86

$$\chi^2_\nu(\text{dof} = 65) = 0.074405$$

Age after ZAMS: 22.510 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -2.1405 \mu\text{Hz}$$

$$a_1 = 0.0018217$$

$$a_2 = -3.3456e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0031056$$

$$c_2 = 4.9628e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 792.77 \text{ s}$$

$$\phi_{\text{HeII}} = 4.2784$$

$$b_2 = 1.4723e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2756.7 \text{ s}$$

$$\phi_{\text{CZ}} = 0.79804$$

$$d_0 = 0.0052542$$

$$d_2 = 8.4379e-07 \mu\text{Hz}^{-2}$$

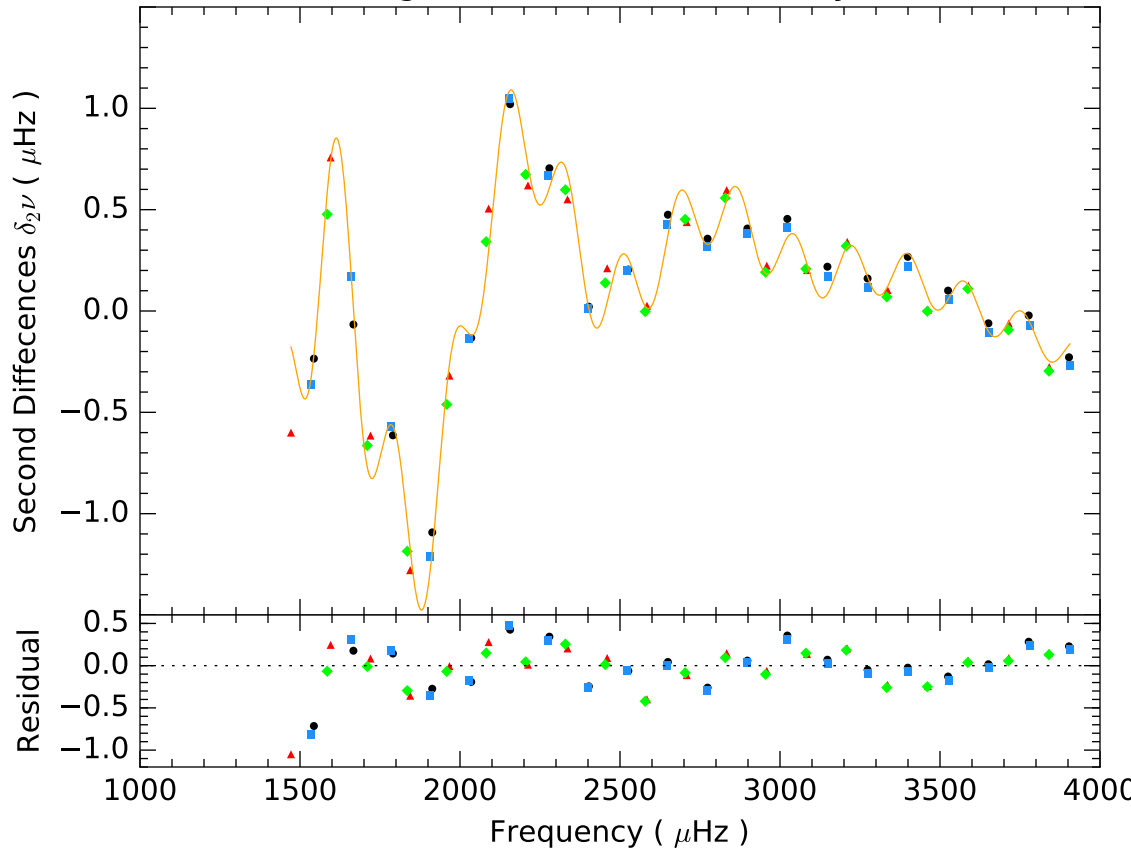
$$\tau_{\text{HI}} = 228.29 \text{ s}$$

$$\phi_{\text{HI}} = 6.2829$$

profile87

$$\chi^2_\nu(\text{dof} = 65) = 0.073561$$

Age after ZAMS: 22.810 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -2.1246 \mu \text{ Hz}$$

$$a_1 = 0.0018595$$

$$a_2 = -3.5061e-07 \mu \text{ Hz}^{-2}$$

$$c_0 = 0.0030821$$

$$c_2 = 5.1352e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{HeII} = 805.6 \text{ s}$$

$$\phi_{HeII} = 4.4325$$

$$b_2 = 1.3114e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2809.0 \text{ s}$$

$$\phi_{CZ} = 0.95321$$

$$d_0 = 0.0049742$$

$$d_2 = 8.715e-07 \mu \text{ Hz}^{-2}$$

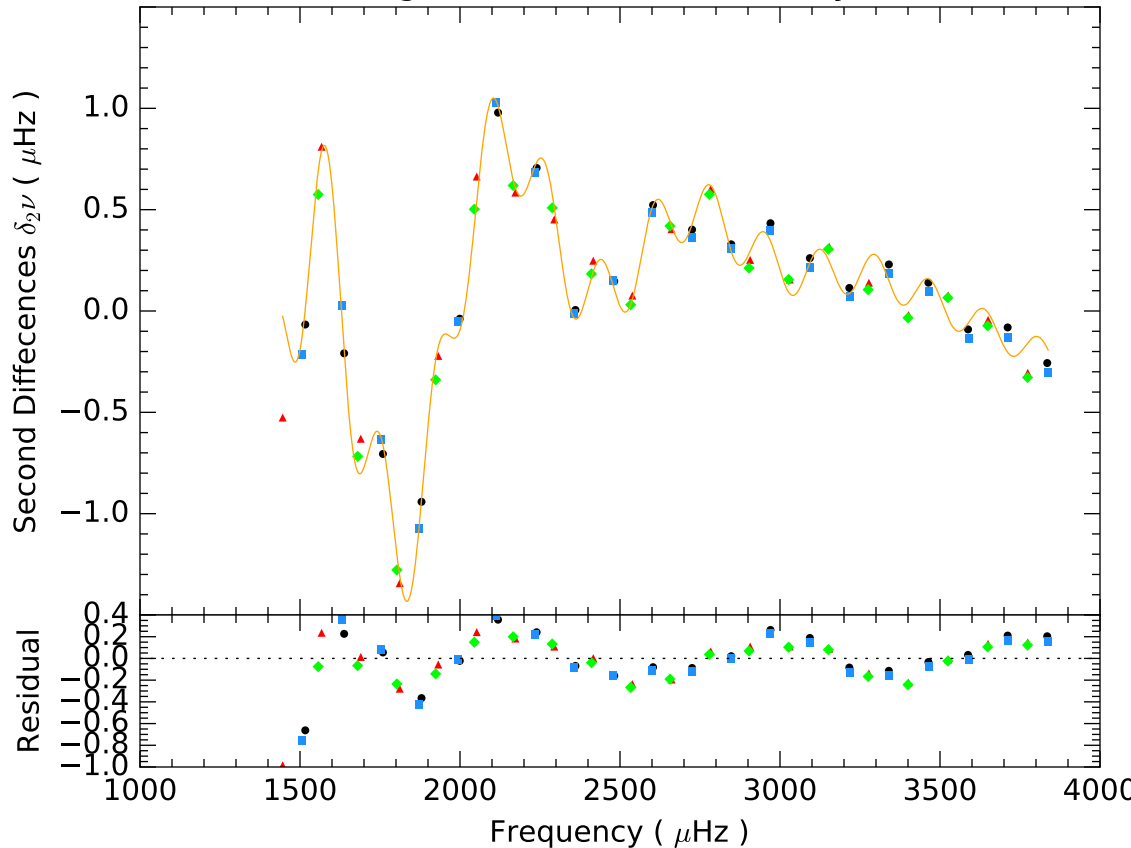
$$\tau_{HI} = 232.25 \text{ s}$$

$$\phi_{HI} = 6.283$$

profile88

$$\chi^2_\nu(\text{dof} = 65) = 0.084236$$

Age after ZAMS: 23.098 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- — fit

$$a_0 = -1.8044 \mu \text{ Hz}$$

$$a_1 = 0.0017111$$

$$a_2 = -3.3901e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0030759$$

$$c_2 = 5.3187e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 819.01 \text{ s}$$

$$\phi_{\text{HeII}} = 4.5878$$

$$b_2 = 1.1301e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2920.5 \text{ s}$$

$$\phi_{\text{CZ}} = 9.8424e-11$$

$$d_0 = 0.0070436$$

$$d_2 = 1.0179e-06 \mu\text{Hz}^{-2}$$

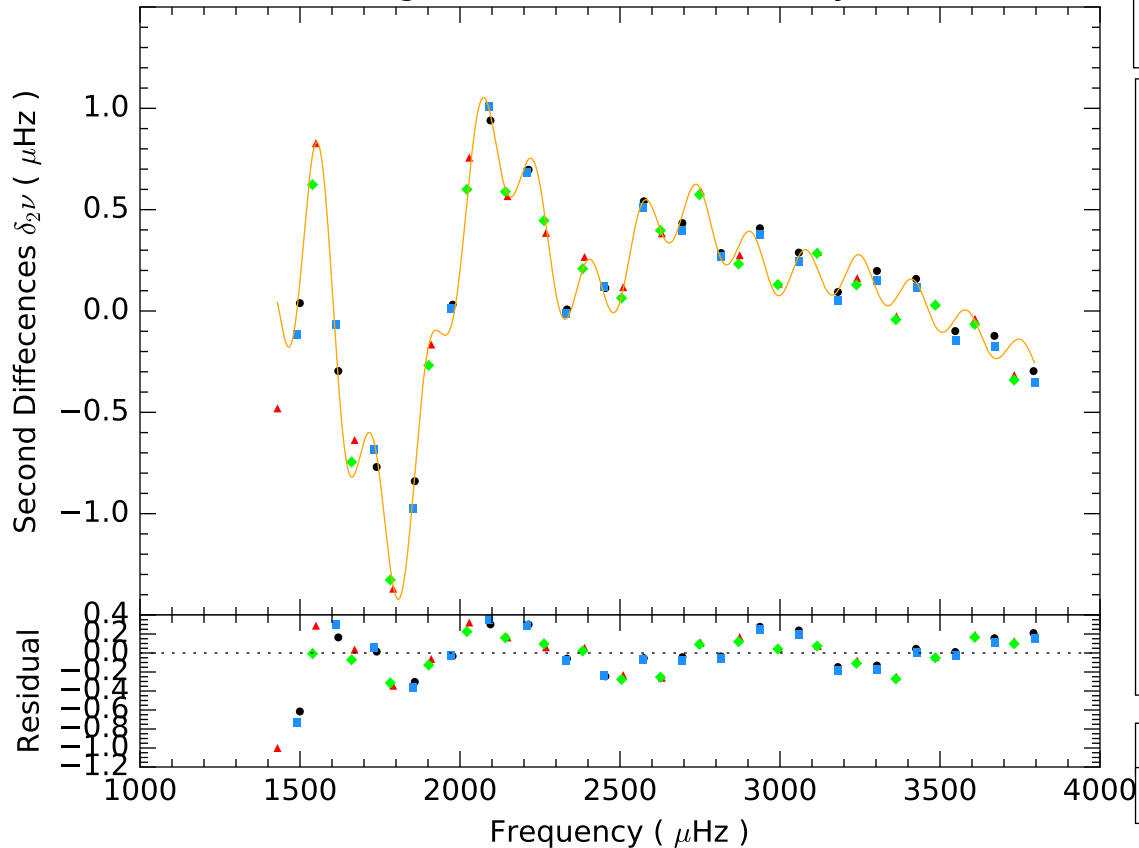
$$\tau_{\text{HI}} = 227.85 \text{ s}$$

$$\phi_{\text{HI}} = 6.2825$$

profile89

$$\chi^2_\nu(\text{dof} = 65) = 0.065327$$

Age after ZAMS: 23.271 Gyr



$$a_0 = -2.0892 \mu\text{Hz}$$

$$a_1 = 0.0019195$$

$$a_2 = -3.7861e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0030654$$

$$c_2 = 5.4391e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 826.3 \text{ s}$$

$$\phi_{HeII} = 4.7265$$

$$b_2 = 1.1042e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2963.5 \text{ s}$$

$$\phi_{CZ} = 1.3216e-17$$

$$d_0 = 0.0044372$$

$$d_2 = 9.1953e-07 \mu\text{Hz}^{-2}$$

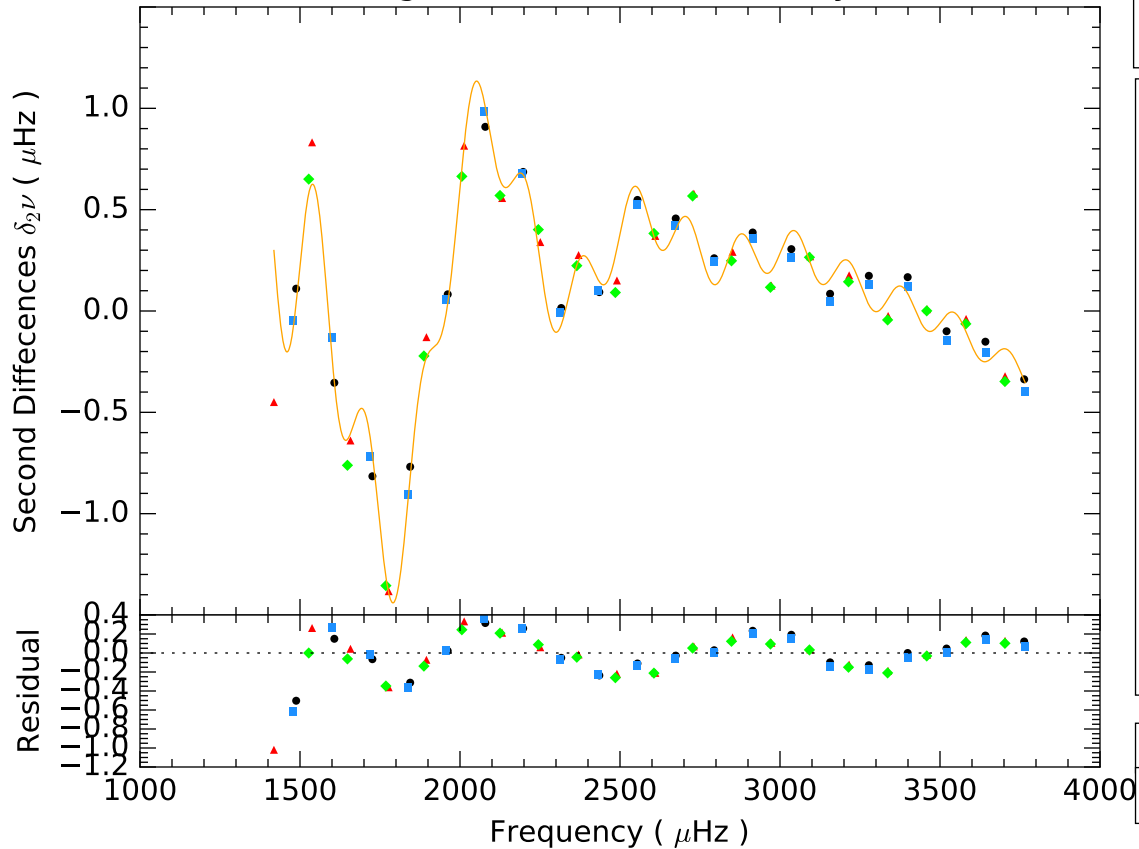
$$\tau_{HI} = 238.56 \text{ s}$$

$$\phi_{HI} = 6.283$$

profile90

$$\chi^2_\nu(\text{dof} = 65) = 0.067369$$

Age after ZAMS: 23.385 Gyr



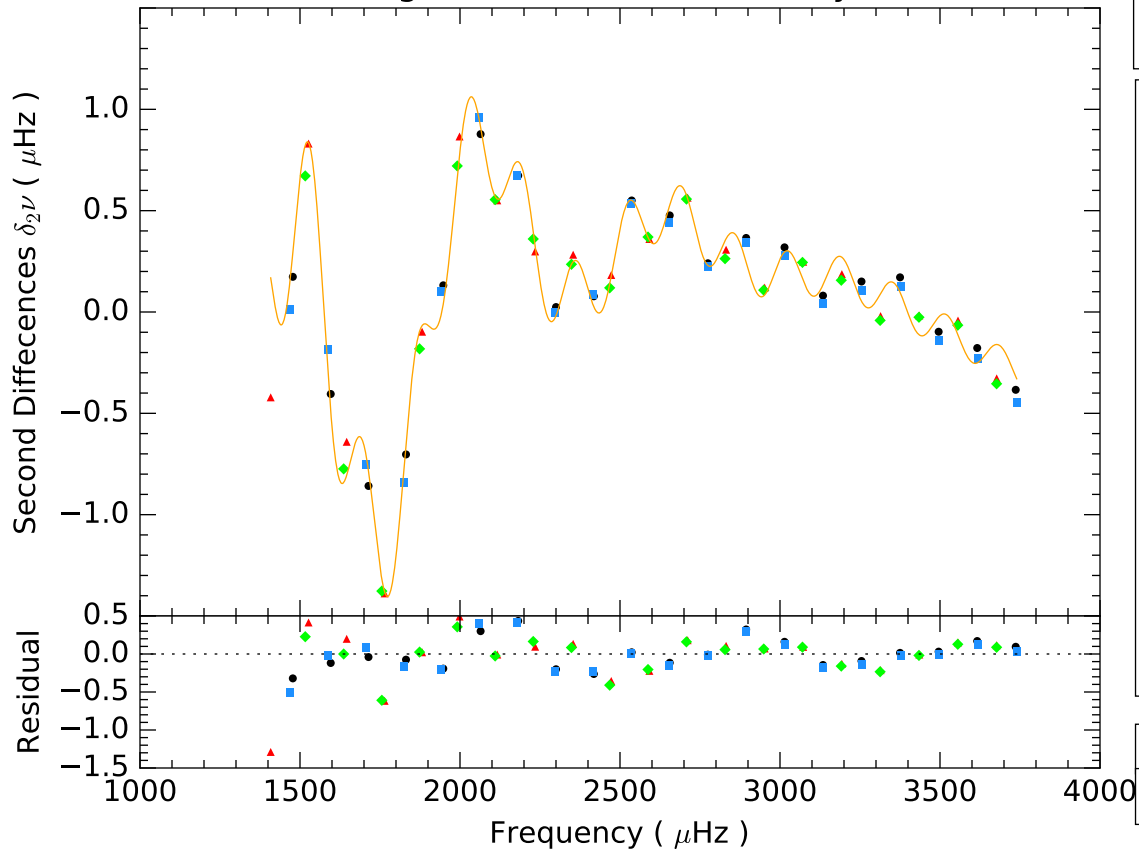
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -2.8285 \mu\text{Hz} \\
 a_1 &= 0.0024675 \\
 a_2 &= -4.7844e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.0023442 \\
 c_2 &= 5.5237e-07 \mu\text{Hz}^{-2} \\
 \tau_{HeII} &= 1017.7 \text{ s} \\
 \phi_{HeII} &= 6.2832 \\
 b_2 &= 9.7703e+05 \text{ mHz}^3 \\
 \tau_{CZ} &= 2996.2 \text{ s} \\
 \phi_{CZ} &= 2.9424e-17 \\
 d_0 &= 0.010828 \\
 d_2 &= 1.0103e-06 \mu\text{Hz}^{-2} \\
 \tau_{HI} &= 613.07 \text{ s} \\
 \phi_{HI} &= 4.075
 \end{aligned}$$

profile91

$$\chi^2_\nu(\text{dof} = 65) = 0.059888$$

Age after ZAMS: 23.487 Gyr



$$a_0 = -2.1993 \mu\text{Hz}$$

$$a_1 = 0.002049$$

$$a_2 = -4.1179e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0030276$$

$$c_2 = 5.6021e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 841.26 \text{ s}$$

$$\phi_{\text{HeII}} = 4.7683$$

$$b_2 = 1.0616e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3018.5 \text{ s}$$

$$\phi_{\text{CZ}} = 5.7038e-11$$

$$d_0 = 0.005441$$

$$d_2 = 1.0488e-06 \mu\text{Hz}^{-2}$$

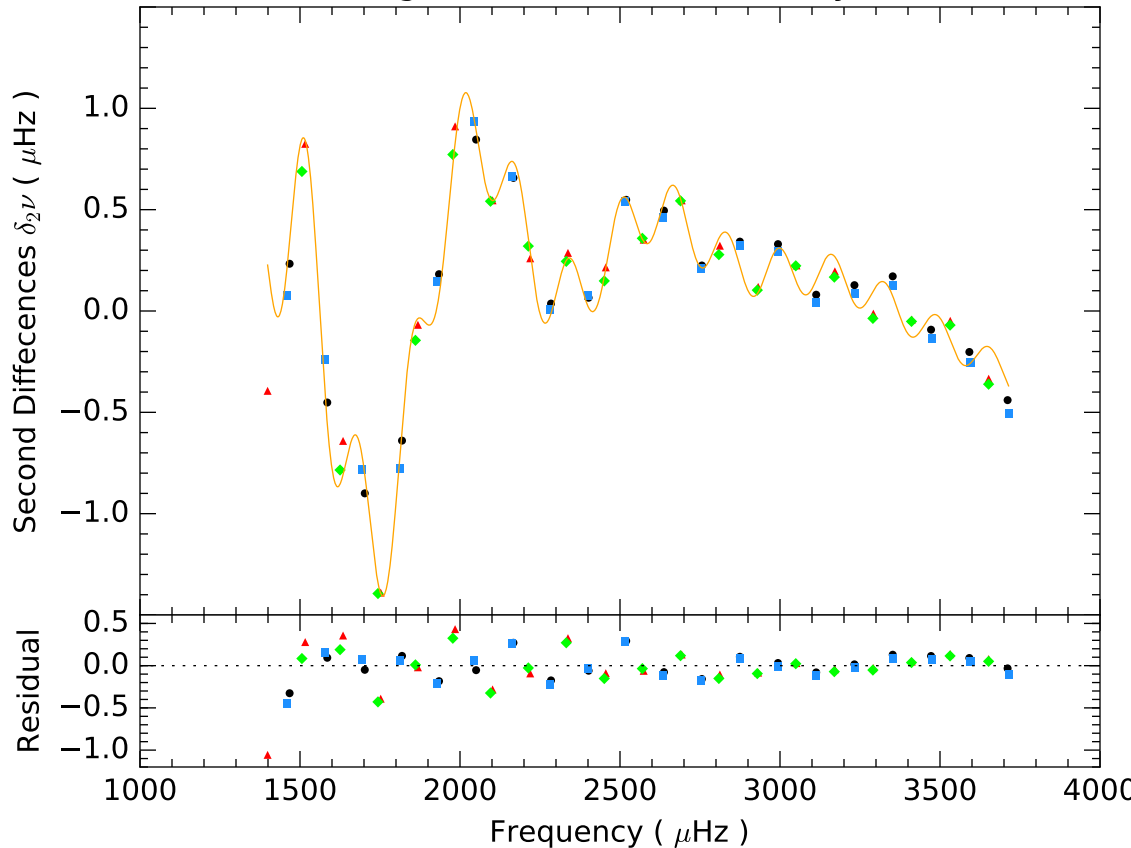
$$\tau_{\text{HI}} = 288.51 \text{ s}$$

$$\phi_{\text{HI}} = 5.1496$$

profile92

$$\chi^2_{\nu}(\text{dof} = 65) = 0.085144$$

Age after ZAMS: 23.583 Gyr



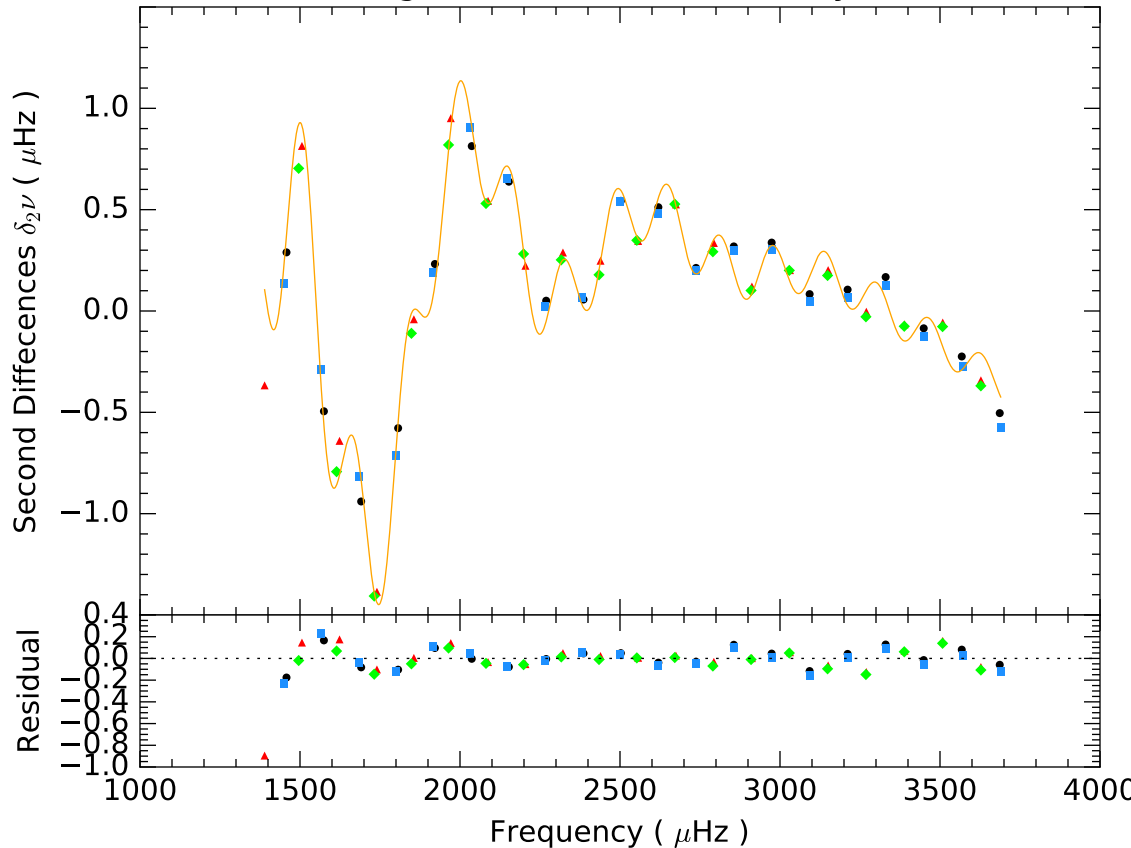
- $\ell=0$
- $\ell=1$
- $\ell=2$
- $\ell=3$
- fit

$a_0 = -2.4511 \mu \text{ Hz}$
 $a_1 = 0.002245$
 $a_2 = -4.5011e-07 \mu\text{Hz}^{-1}$
 $c_0 = 0.0029738$
 $c_2 = 5.6789e-07 \mu\text{Hz}^{-2}$
 $\tau_{HeII} = 853.84 \text{ s}$
 $\phi_{HeII} = 4.6487$
 $b_2 = 1.0758e+06 \text{ mHz}^3$
 $\tau_{CZ} = 3043.5 \text{ s}$
 $\phi_{CZ} = 9.6041e-11$
 $d_0 = 0.0050664$
 $d_2 = 1.0561e-06 \mu\text{Hz}^{-2}$
 $\tau_{HI} = 348.39 \text{ s}$
 $\phi_{HI} = 3.9217$

profile93

 $\chi^2_{\nu}(\text{dof} = 65) = 0.054794$

Age after ZAMS: 23.674 Gyr



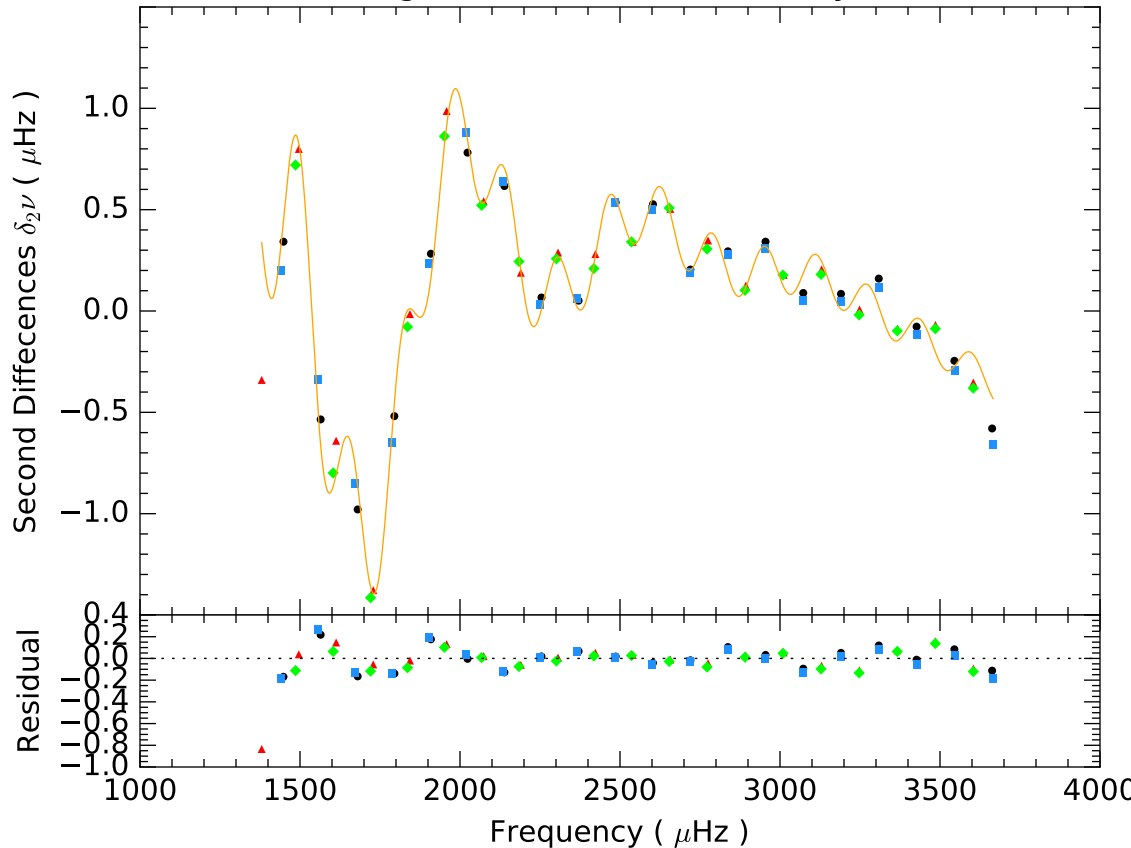
- $\ell=0$
- $\ell=1$
- $\ell=2$
- $\ell=3$
- fit

$a_0 = -3.32 \mu \text{ Hz}$
 $a_1 = 0.0028584$
 $a_2 = -5.5811e-07 \mu\text{Hz}^{-2}$
 $c_0 = 0.0031084$
 $c_2 = 5.7111e-07 \mu\text{Hz}^{-2}$
 $\tau_{HeII} = 870.38 \text{ s}$
 $\phi_{HeII} = 4.4716$
 $b_2 = 1.1169e+06 \text{ mHz}^3$
 $\tau_{CZ} = 3065.4 \text{ s}$
 $\phi_{CZ} = 0.0043405$
 $d_0 = 0.0012585$
 $d_2 = 6.768e-07 \mu\text{Hz}^{-2}$
 $\tau_{HI} = 329.91 \text{ s}$
 $\phi_{HI} = 4.9039$

profile94

 $\chi^2_{\nu}(\text{dof} = 65) = 0.022179$

Age after ZAMS: 23.761 Gyr



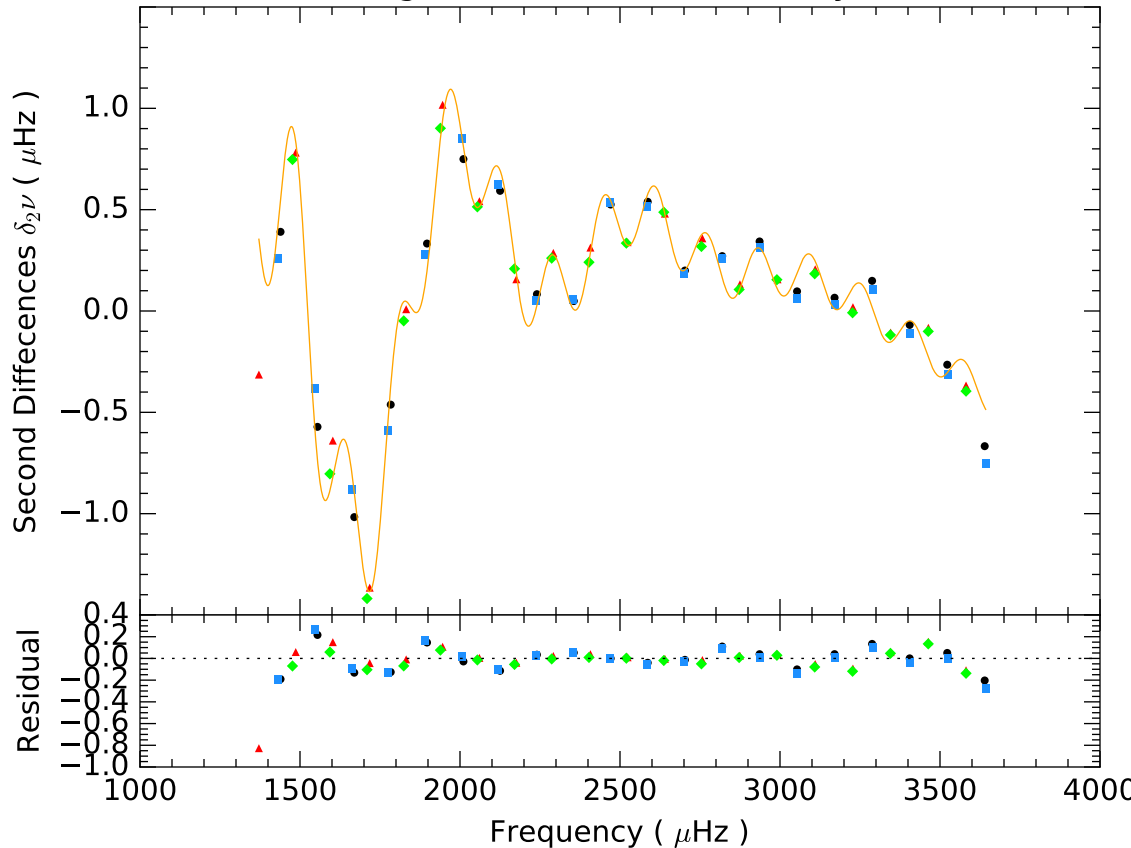
- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -2.6616 \mu\text{Hz} \\
 a_1 &= 0.002447 \\
 a_2 &= -4.9672e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.0028868 \\
 c_2 &= 5.83e-07 \mu\text{Hz}^{-2} \\
 \tau_{\text{HeII}} &= 875.79 \text{ s} \\
 \phi_{\text{HeII}} &= 4.4784 \\
 b_2 &= 1.0613e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 3091.6 \text{ s} \\
 \phi_{\text{CZ}} &= 9.9368e-11 \\
 d_0 &= 0.0057354 \\
 d_2 &= 1.1295e-06 \mu\text{Hz}^{-2} \\
 \tau_{\text{HI}} &= 432.67 \text{ s} \\
 \phi_{\text{HI}} &= 2.218
 \end{aligned}$$

profile95

$$\chi^2_{\nu}(\text{dof} = 65) = 0.022266$$

Age after ZAMS: 23.844 Gyr



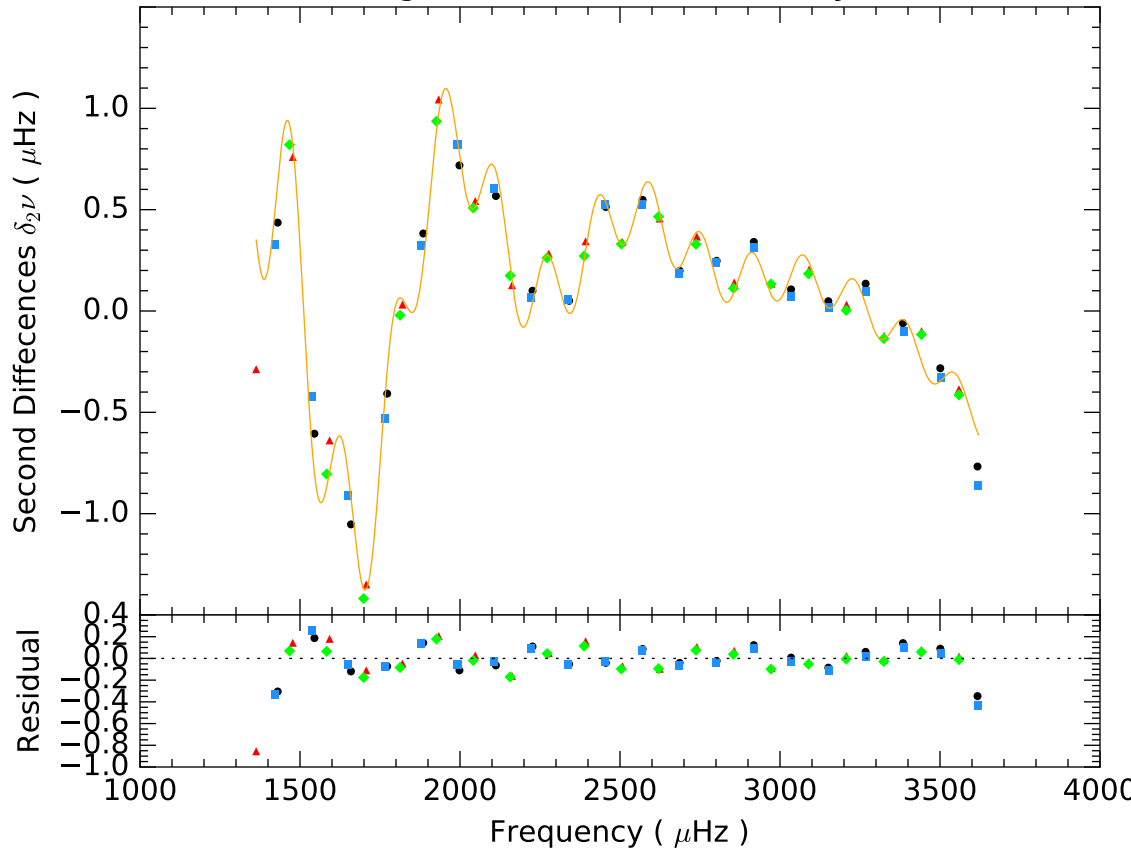
- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$\begin{aligned}
 a_0 &= -3.436 \mu\text{Hz} \\
 a_1 &= 0.003016 \\
 a_2 &= -6.0048e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.0029968 \\
 c_2 &= 5.9044e-07 \mu\text{Hz}^{-2} \\
 \tau_{HeII} &= 860.47 \text{ s} \\
 \phi_{HeII} &= 5.0814 \\
 b_2 &= 1.0647e+06 \text{ mHz}^3 \\
 \tau_{CZ} &= 3108.6 \text{ s} \\
 \phi_{CZ} &= 0.14989 \\
 d_0 &= 0.00059048 \\
 d_2 &= 5.4659e-07 \mu\text{Hz}^{-2} \\
 \tau_{HI} &= 385.1 \text{ s} \\
 \phi_{HI} &= 3.6513
 \end{aligned}$$

profile96

$$\chi^2_\nu(\text{dof} = 65) = 0.021825$$

Age after ZAMS: 23.923 Gyr



- $\ell=0$
- ▲ $\ell=1$
- $\ell=2$
- ◆ $\ell=3$
- fit

$$a_0 = -4.8137 \mu\text{Hz}$$

$$a_1 = 0.0041783$$

$$a_2 = -8.3463e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0031302$$

$$c_2 = 5.9779e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 848.68 \text{ s}$$

$$\phi_{\text{HeII}} = 5.5169$$

$$b_2 = 1.0756e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3124.5 \text{ s}$$

$$\phi_{\text{CZ}} = 0.34397$$

$$d_0 = 3.4286e-05$$

$$d_2 = 3.3843e-09 \mu\text{Hz}^{-2}$$

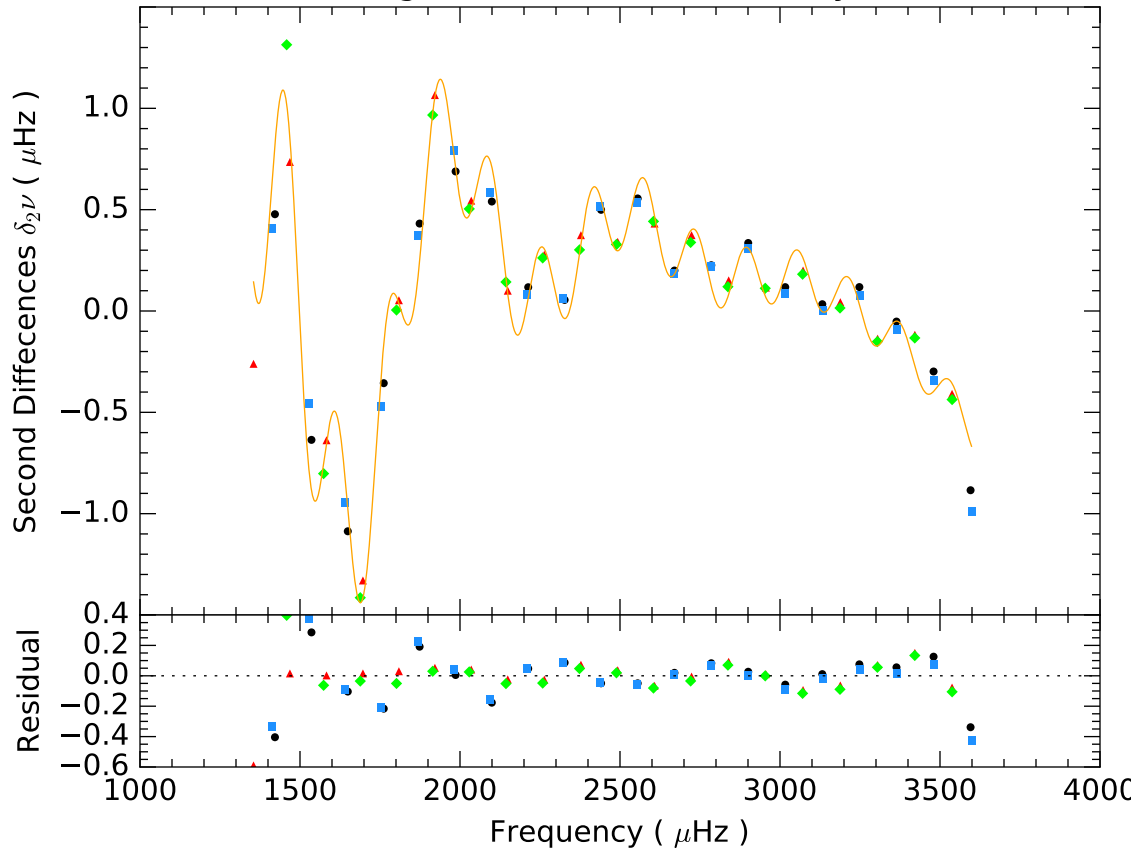
$$\tau_{\text{HI}} = 336.05 \text{ s}$$

$$\phi_{\text{HI}} = 5.8631$$

profile97

$$\chi^2_\nu(\text{dof} = 65) = 0.029907$$

Age after ZAMS: 23.998 Gyr



$$a_0 = -4.6884 \mu\text{Hz}$$

$$a_1 = 0.0041231$$

$$a_2 = -8.3356e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.003097$$

$$c_2 = 6.0505e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 859.81 \text{ s}$$

$$\phi_{\text{HeII}} = 5.4081$$

$$b_2 = 1.2511e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3127.5 \text{ s}$$

$$\phi_{\text{CZ}} = 0.92277$$

$$d_0 = 3.2073e-05$$

$$d_2 = 3.7078e-11 \mu\text{Hz}^{-2}$$

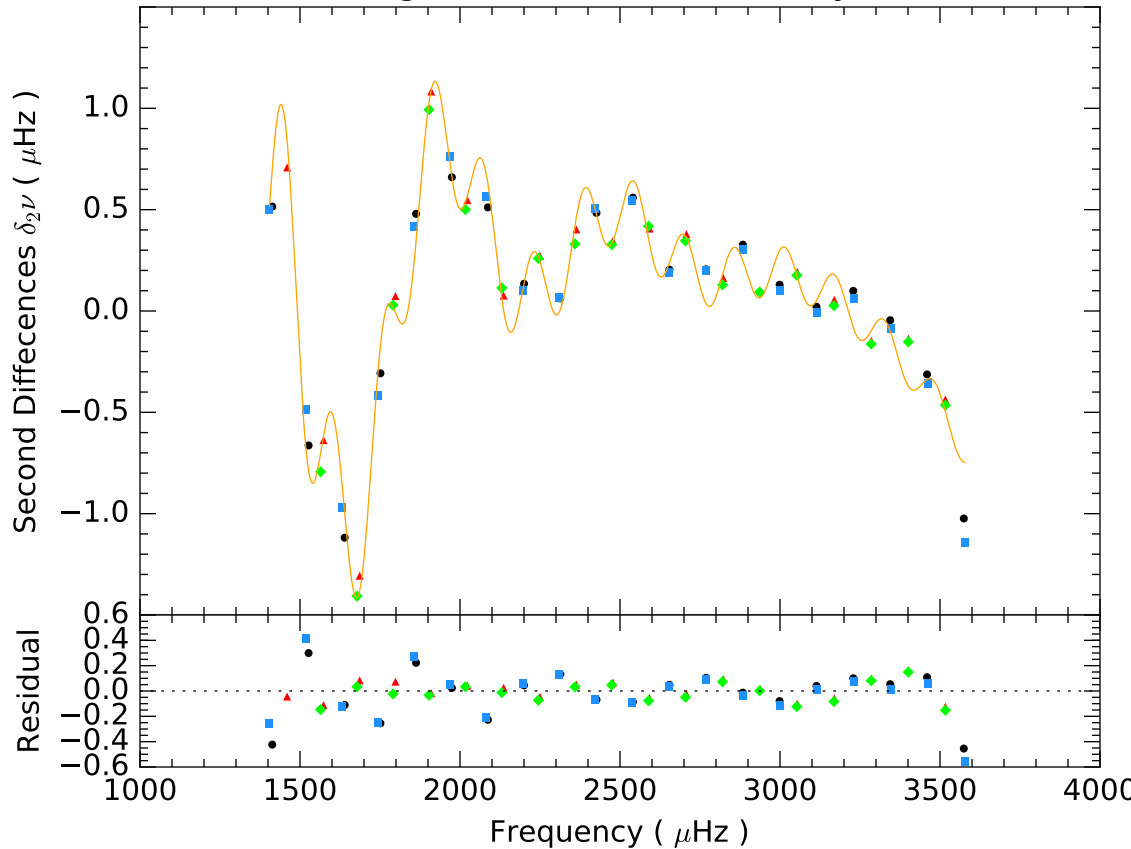
$$\tau_{\text{HI}} = 359.32 \text{ s}$$

$$\phi_{\text{HI}} = 5.2276$$

profile98

$$\chi^2_\nu(\text{dof} = 65) = 0.027738$$

Age after ZAMS: 24.070 Gyr



$$a_0 = -5.4568 \mu\text{Hz}$$

$$a_1 = 0.0047989$$

$$a_2 = -9.7584e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0030669$$

$$c_2 = 6.0912e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 892.46 \text{ s}$$

$$\phi_{HeII} = 4.7866$$

$$b_2 = 1.134e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 3193.5 \text{ s}$$

$$\phi_{CZ} = 6.2832$$

$$d_0 = 4.6935e-05$$

$$d_2 = 1.7699e-13 \mu\text{Hz}^{-2}$$

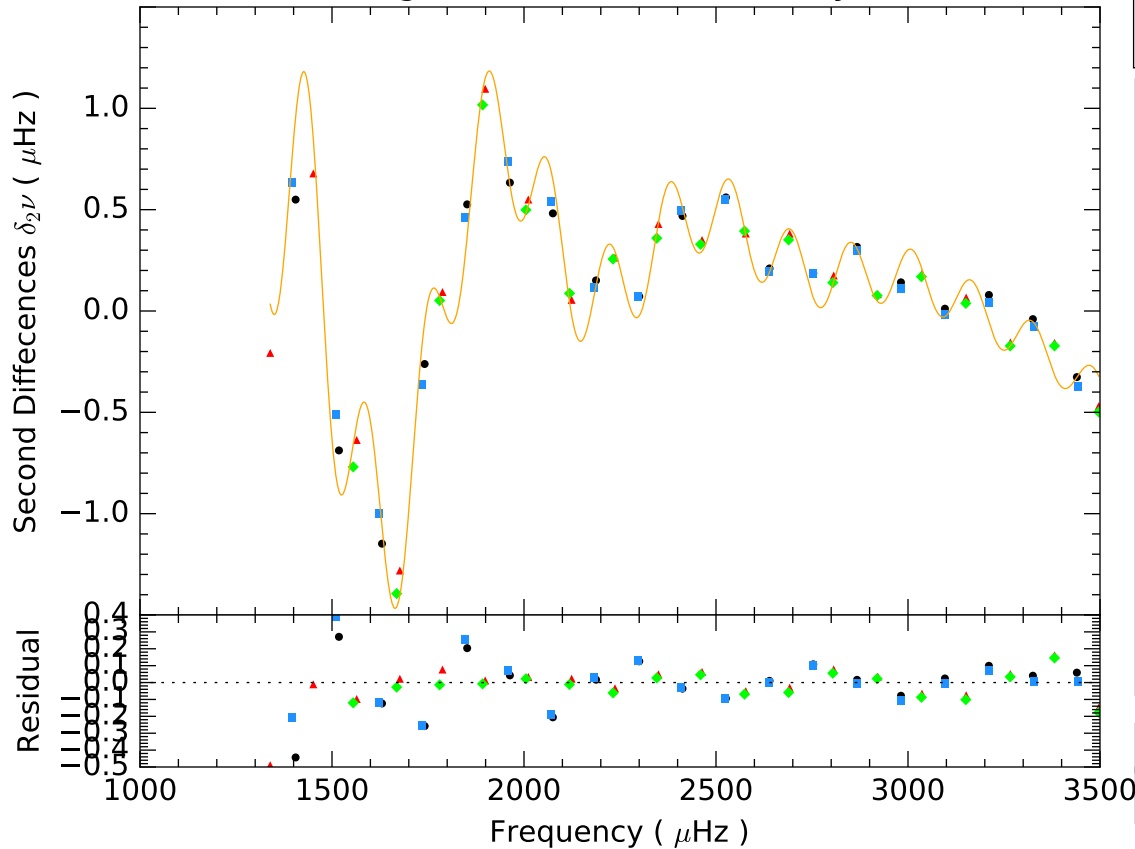
$$\tau_{HI} = 335.55 \text{ s}$$

$$\phi_{HI} = 6.2832$$

profile99

$$\chi^2_\nu(\text{dof} = 63) = 0.028321$$

Age after ZAMS: 24.138 Gyr



$$a_0 = -4.1756 \mu\text{Hz}$$

$$a_1 = 0.0036996$$

$$a_2 = -7.5149e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0033345$$

$$c_2 = 6.402e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 890.77 \text{ s}$$

$$\phi_{\text{HeII}} = 4.9972$$

$$b_2 = 1.2773e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3176.2 \text{ s}$$

$$\phi_{\text{CZ}} = 0.87516$$

$$d_0 = 0.00015004$$

$$d_2 = 2.5898e-07 \mu\text{Hz}^{-2}$$

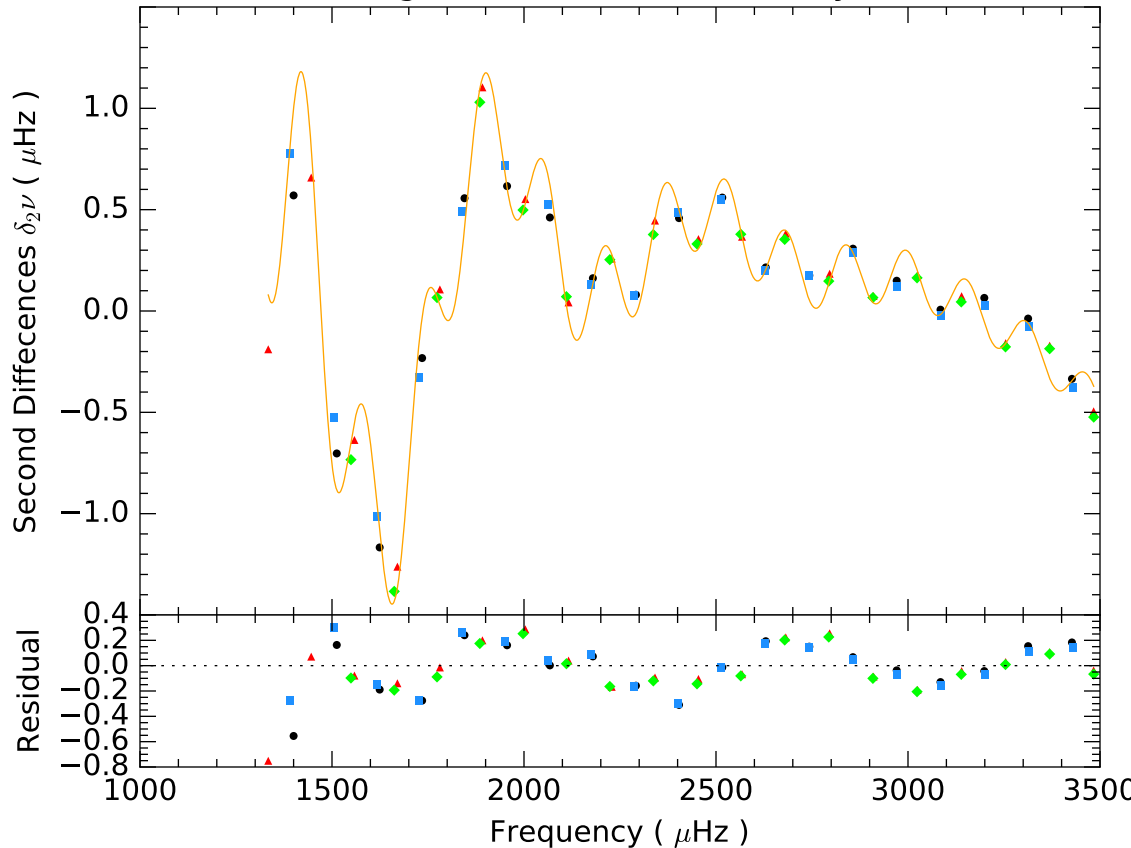
$$\tau_{\text{HI}} = 341.75 \text{ s}$$

$$\phi_{\text{HI}} = 5.587$$

profile100

$$\chi^2_\nu(\text{dof} = 62) = 0.022159$$

Age after ZAMS: 24.182 Gyr



- \bullet $\ell=0$
- \blacktriangle $\ell=1$
- \blacksquare $\ell=2$
- \blacklozenge $\ell=3$
- fit

$$a_0 = -4.6715 \mu\text{Hz}$$

$$a_1 = 0.0041756$$

$$a_2 = -8.5733e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.003362$$

$$c_2 = 6.4493e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 889.92 \text{ s}$$

$$\phi_{HeII} = 5.1189$$

$$b_2 = 1.2348e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 3189.0 \text{ s}$$

$$\phi_{CZ} = 0.9197$$

$$d_0 = 5.2168e-05$$

$$d_2 = 5.922e-08 \mu\text{Hz}^{-2}$$

$$\tau_{HI} = 332.04 \text{ s}$$

$$\phi_{HI} = 6.283$$

profile101

$$\chi^2_\nu(\text{dof} = 62) = 0.04402$$