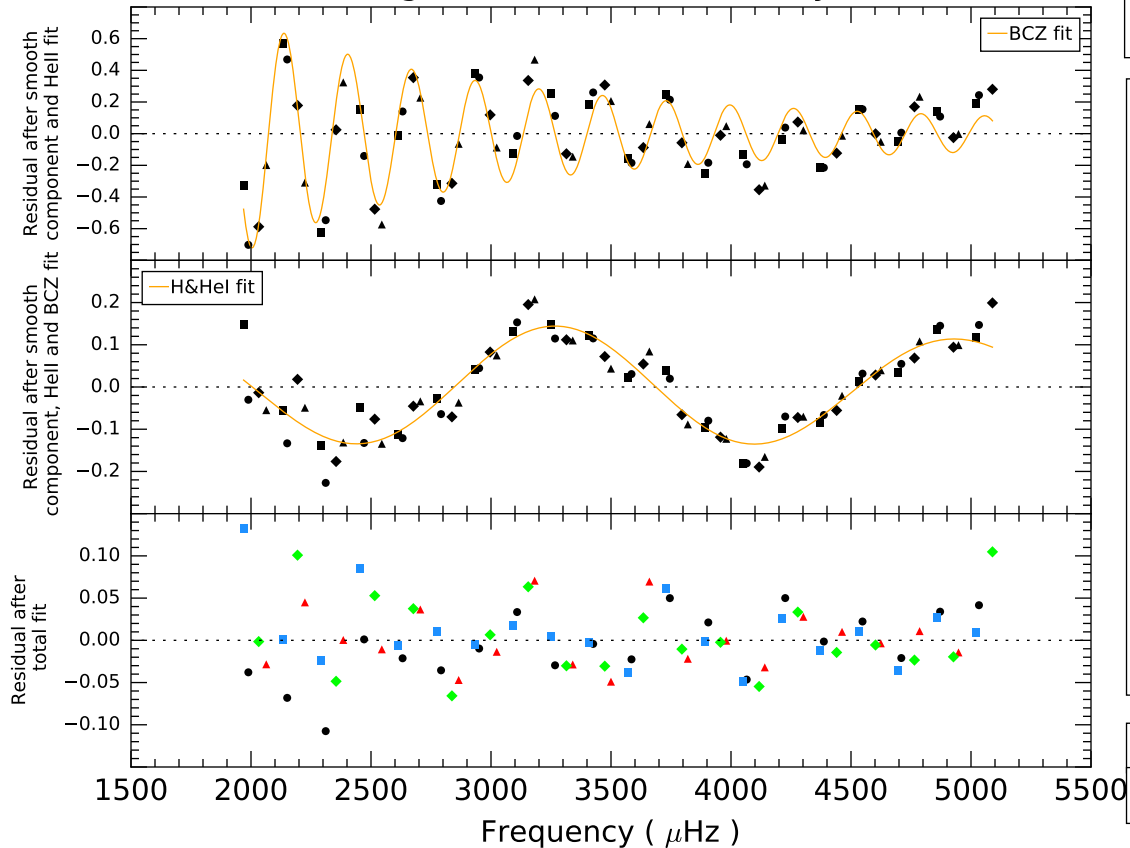


Age after ZAMS: 0.000 Gyr



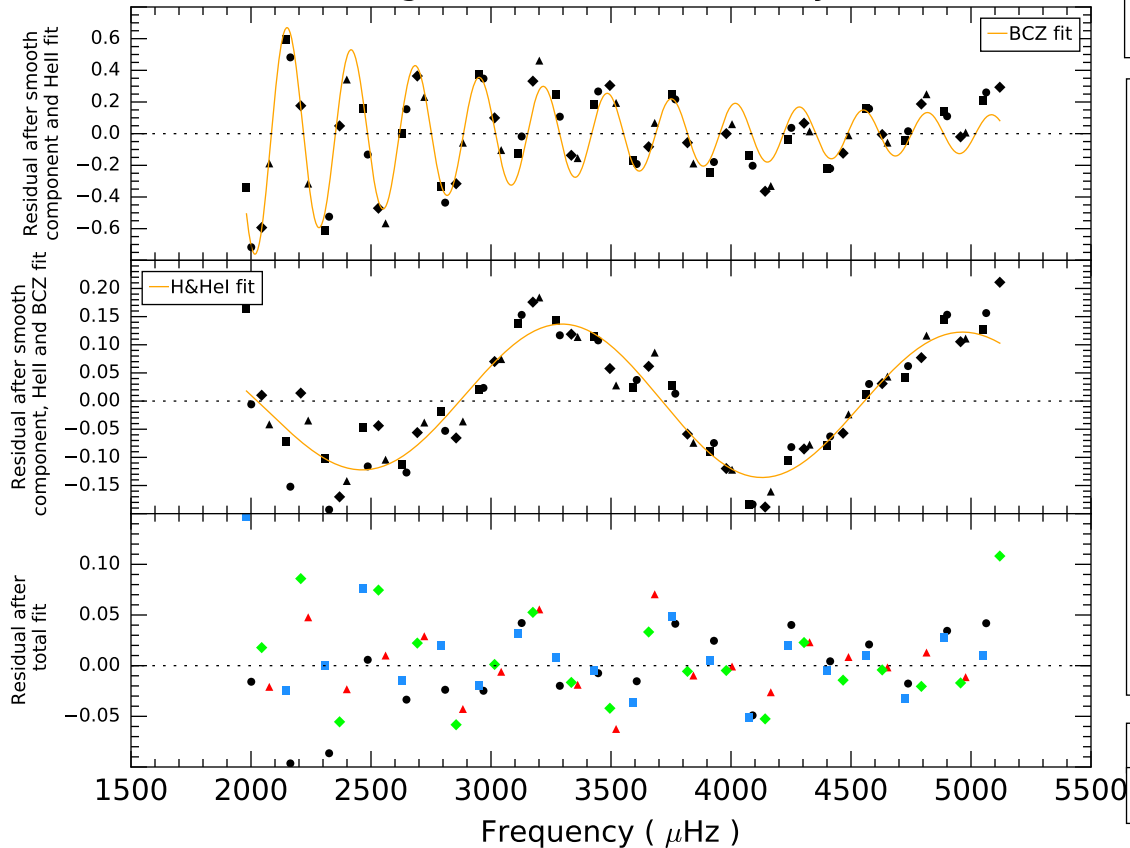
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -7.1259 \mu \text{ Hz} \\
 a_1 &= 0.0037231 \\
 a_2 &= -4.6018e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0022517 \\
 c_2 &= 2.3458e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HeII}} &= 545.75 \text{ s} \\
 \phi_{\text{HeII}} &= 3.73 \\
 b_2 &= 2.899e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 1884.6 \text{ s} \\
 \phi_{\text{CZ}} &= 1.183 \\
 d_0 &= 7.3299e-05 \\
 d_2 &= 4.7452e-08 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 297.36 \text{ s} \\
 \phi_{\text{HI}} &= 1.9293
 \end{aligned}$$

profile1

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0020981$$

Age after ZAMS: 0.000 Gyr



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

$$a_1 = 0.0037656$$

$$a_2 = -4.626e-07 \mu \text{ Hz}^{-1}$$

$$c_0 = 0.0021849$$

$$c_2 = 2.2937e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{HeII}} = 541.32 \text{ s}$$

$$\phi_{\text{HeII}} = 3.7413$$

$$b_2 = 3.0984e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1874.3 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1571$$

$$d_0 = 6.2481e-05$$

$$d_2 = 3.7631e-08 \mu \text{ Hz}^{-2}$$

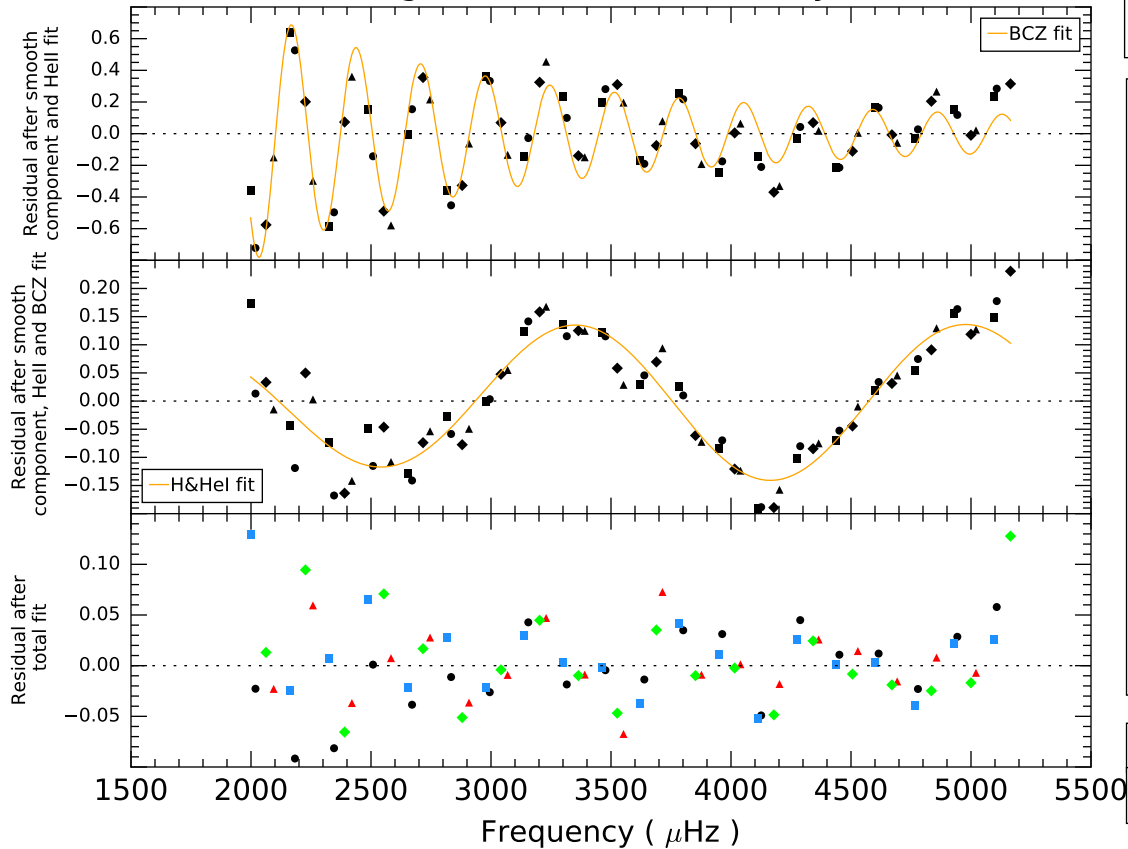
$$\tau_{\text{HI}} = 296.49 \text{ s}$$

$$\phi_{\text{HI}} = 1.8755$$

profile2

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0020448$$

Age after ZAMS: 0.001 Gyr



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

$$a_0 = -7.3492 \mu \text{ Hz}$$

$$a_1 = 0.0037781$$

$$a_2 = -4.6024e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0021649$$

$$c_2 = 2.2691e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 537.42 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6643$$

$$b_2 = 3.2322e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1857.8 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1825$$

$$d_0 = 5.5615e-05$$

$$d_2 = 2.8657e-08 \mu\text{Hz}^{-2}$$

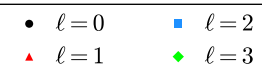
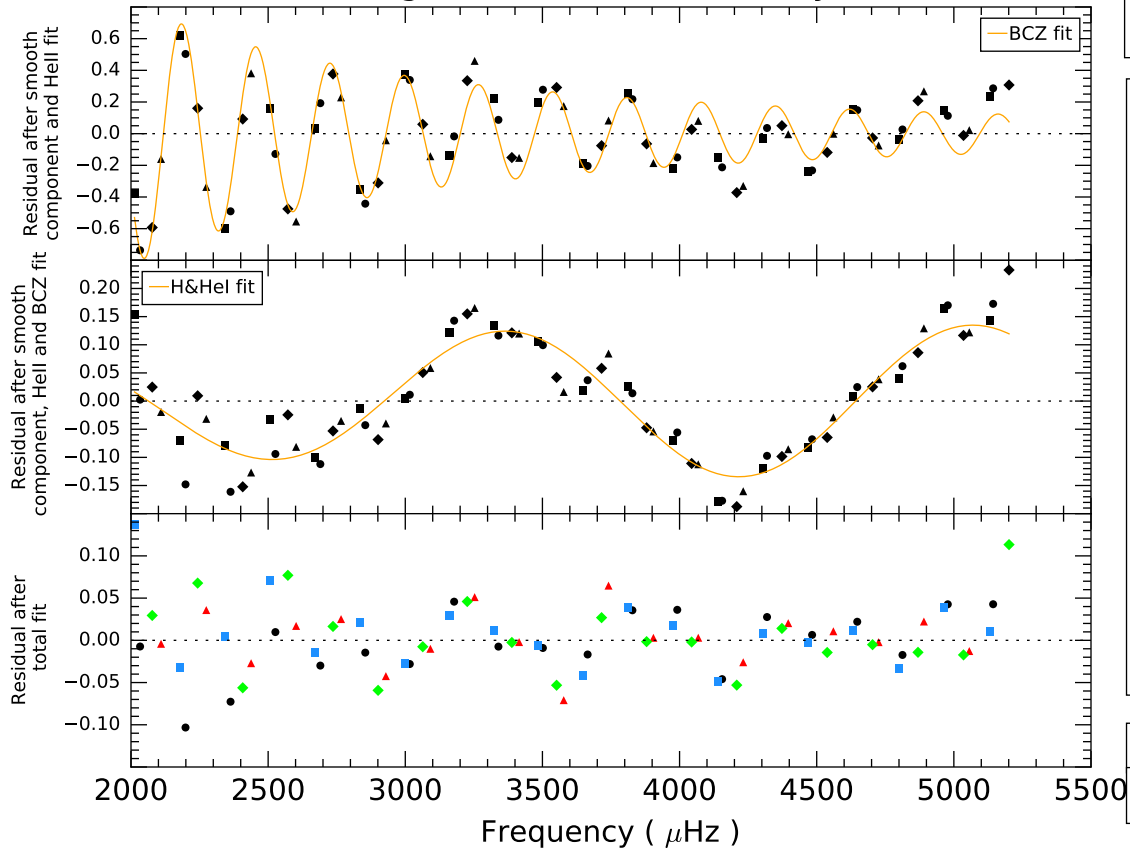
$$\tau_{\text{HI}} = 305.02 \text{ s}$$

$$\phi_{\text{HI}} = 1.3179$$

profile3

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0020718$$

Age after ZAMS: 0.002 Gyr

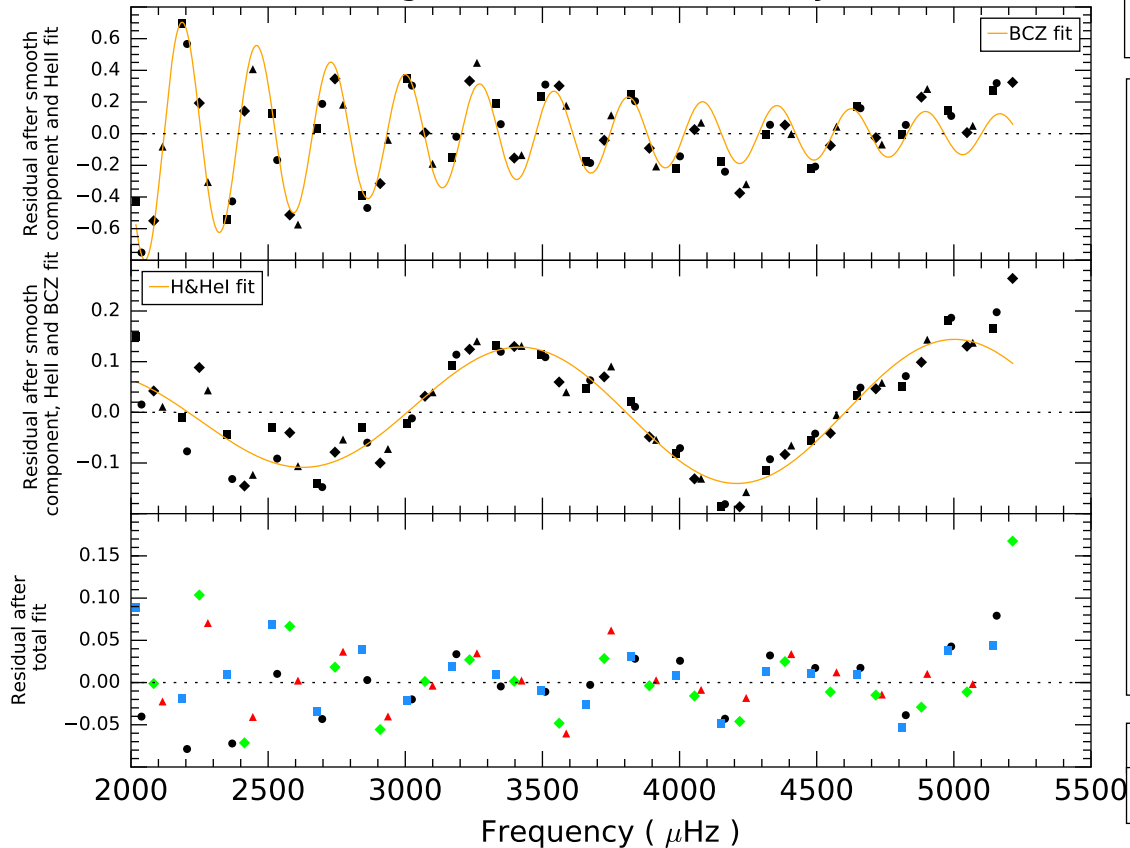


$$\begin{aligned}
 a_0 &= -7.4724 \mu \text{ Hz} \\
 a_1 &= 0.0037996 \\
 a_2 &= -4.5799e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0020568 \\
 c_2 &= 2.1881e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HeII}} &= 529.49 \text{ s} \\
 \phi_{\text{HeII}} &= 3.7823 \\
 b_2 &= 3.3082e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 1847.9 \text{ s} \\
 \phi_{\text{CZ}} &= 1.0892 \\
 d_0 &= 4.7868e-05 \\
 d_2 &= 2.2847e-08 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 290.87 \text{ s} \\
 \phi_{\text{HI}} &= 1.8824
 \end{aligned}$$

profile4

$$\chi^2_\nu(\text{dof} = 65) = 0.0019382$$

Age after ZAMS: 0.004 Gyr



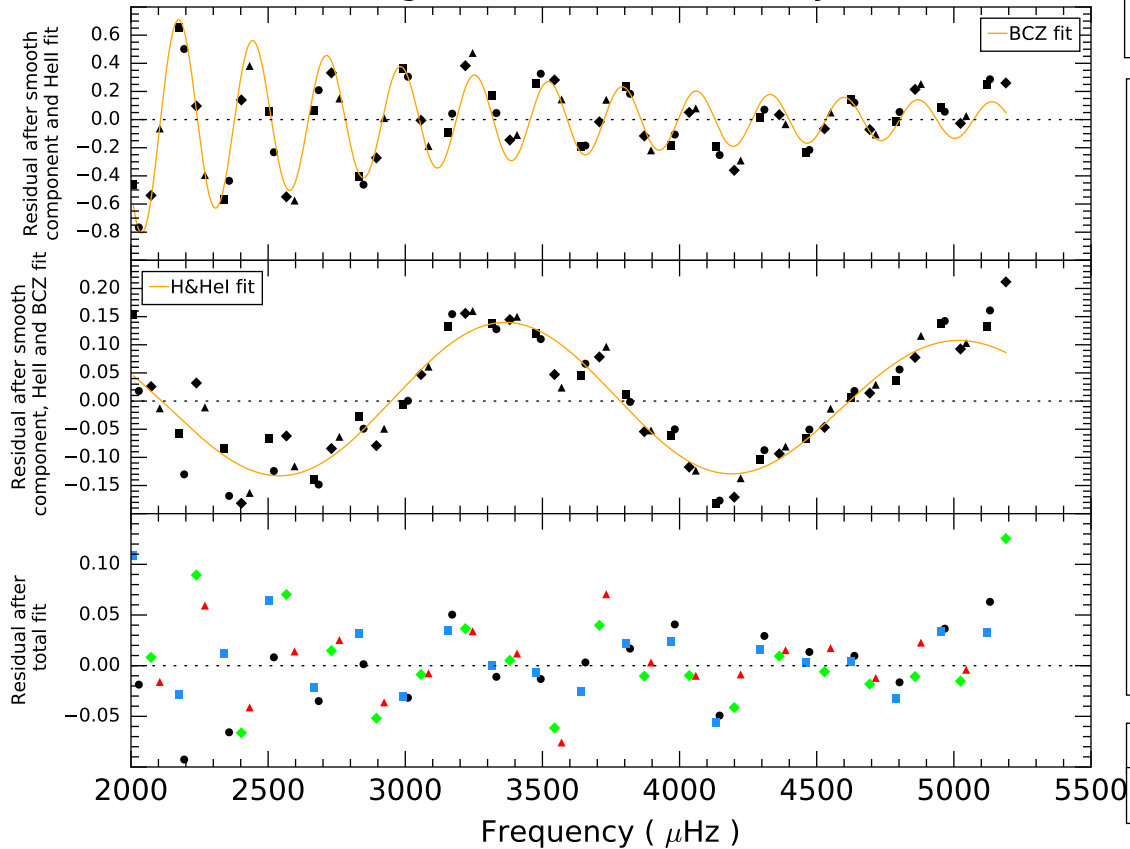
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -7.4892 \mu \text{ Hz} \\
 a_1 &= 0.0038081 \\
 a_2 &= -4.5941e-07 \mu\text{Hz}^{-1} \\
 c_0 &= 0.002093 \\
 c_2 &= 2.2261e-07 \mu\text{Hz}^{-2} \\
 \tau_{\text{HeII}} &= 533.49 \text{ s} \\
 \phi_{\text{HeII}} &= 3.5733 \\
 b_2 &= 3.3661e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 1845.5 \text{ s} \\
 \phi_{\text{CZ}} &= 1.0931 \\
 d_0 &= 4.772e-05 \\
 d_2 &= 2.0179e-08 \mu\text{Hz}^{-2} \\
 \tau_{\text{HI}} &= 313.22 \text{ s} \\
 \phi_{\text{HI}} &= 0.73025
 \end{aligned}$$

profile5

$$\chi^2_{\nu}(\text{dof} = 65) = 0.002144$$

Age after ZAMS: 0.007 Gyr



- $\ell=0$
- $\ell=1$
- $\ell=2$
- $\ell=3$

$$a_0 = -7.2117 \mu \text{ Hz}$$

$$a_1 = 0.0036675$$

$$a_2 = -4.4179e-07 \mu \text{ Hz}^{-2}$$

$$c_0 = 0.0021502$$

$$c_2 = 2.2656e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{HeII}} = 533.58 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6852$$

$$b_2 = 3.3543e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1855.4 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1209$$

$$d_0 = 7.1055e-05$$

$$d_2 = 4.743e-08 \mu \text{ Hz}^{-2}$$

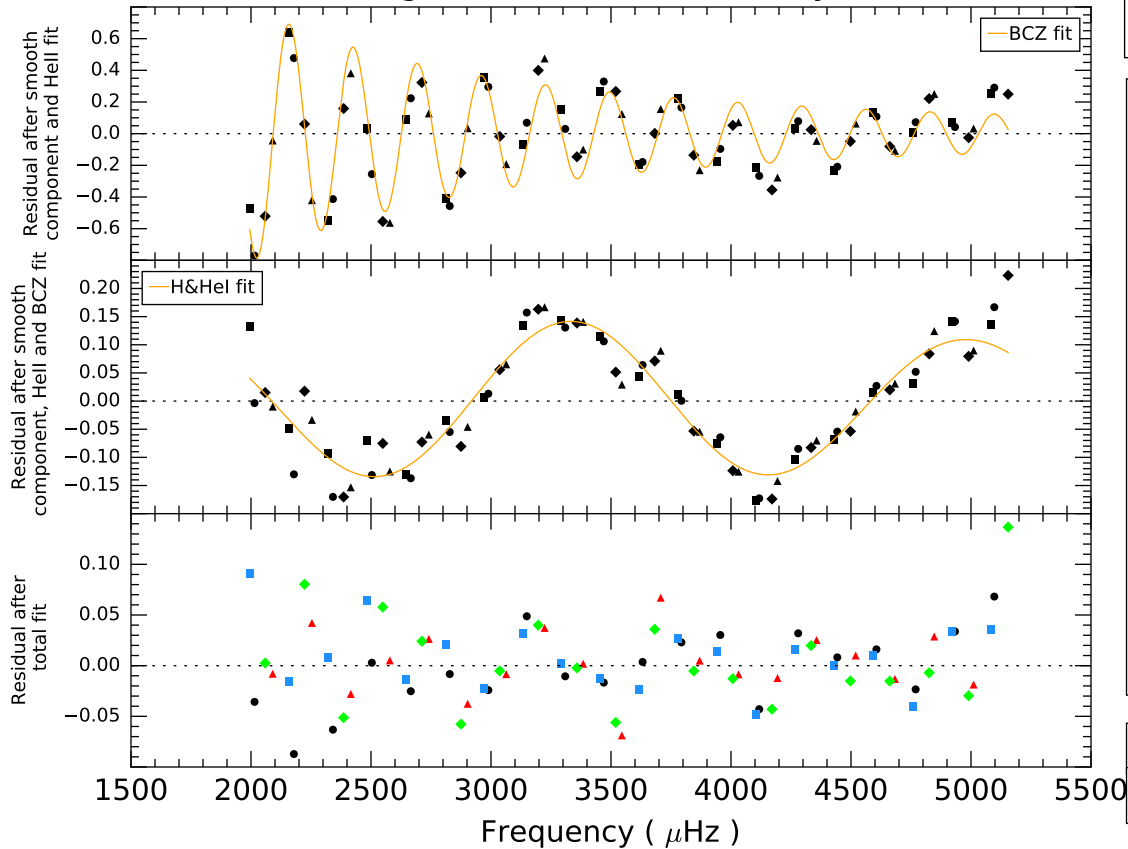
$$\tau_{\text{HI}} = 299.15 \text{ s}$$

$$\phi_{\text{HI}} = 1.4853$$

profile6

$$\chi^2_{\nu}(\text{dof} = 65) = 0.001925$$

Age after ZAMS: 0.013 Gyr



$$a_0 = -7.1713 \mu\text{Hz}$$

$$a_1 = 0.0036804$$

$$a_2 = -4.4725e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0021725$$

$$c_2 = 2.3001e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 538.29 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6881$$

$$b_2 = 3.2177e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1872.0 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0417$$

$$d_0 = 7.2466e-05$$

$$d_2 = 4.8079e-08 \mu\text{Hz}^{-2}$$

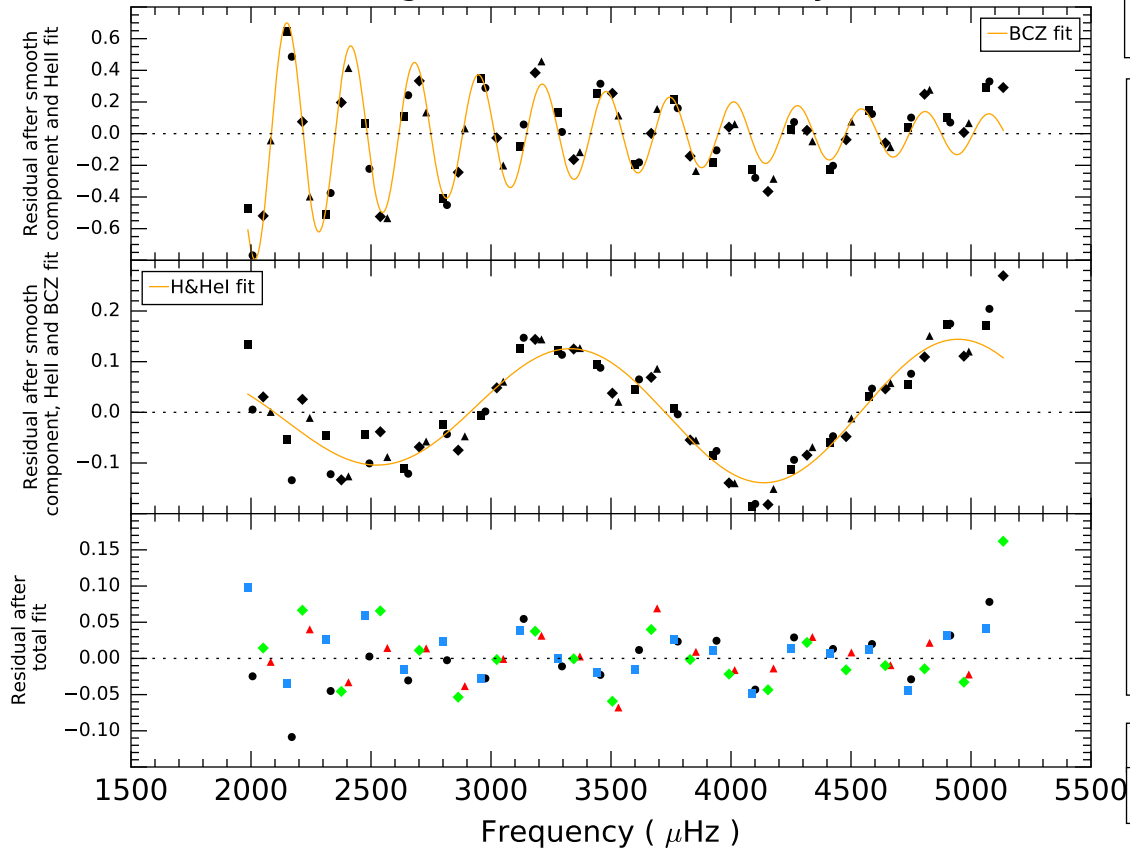
$$\tau_{\text{HI}} = 300.54 \text{ s}$$

$$\phi_{\text{HI}} = 1.5447$$

profile7

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0017526$$

Age after ZAMS: 0.023 Gyr



$$a_0 = -7.4194 \mu \text{ Hz}$$

$$a_1 = 0.0038482$$

$$a_2 = -4.7311e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0020923$$

$$c_2 = 2.2708e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 542.17 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6593$$

$$b_2 = 3.2359e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1880.8 \text{ s}$$

$$\phi_{\text{CZ}} = 0.99609$$

$$d_0 = 4.6815e-05$$

$$d_2 = 1.9348e-08 \mu\text{Hz}^{-2}$$

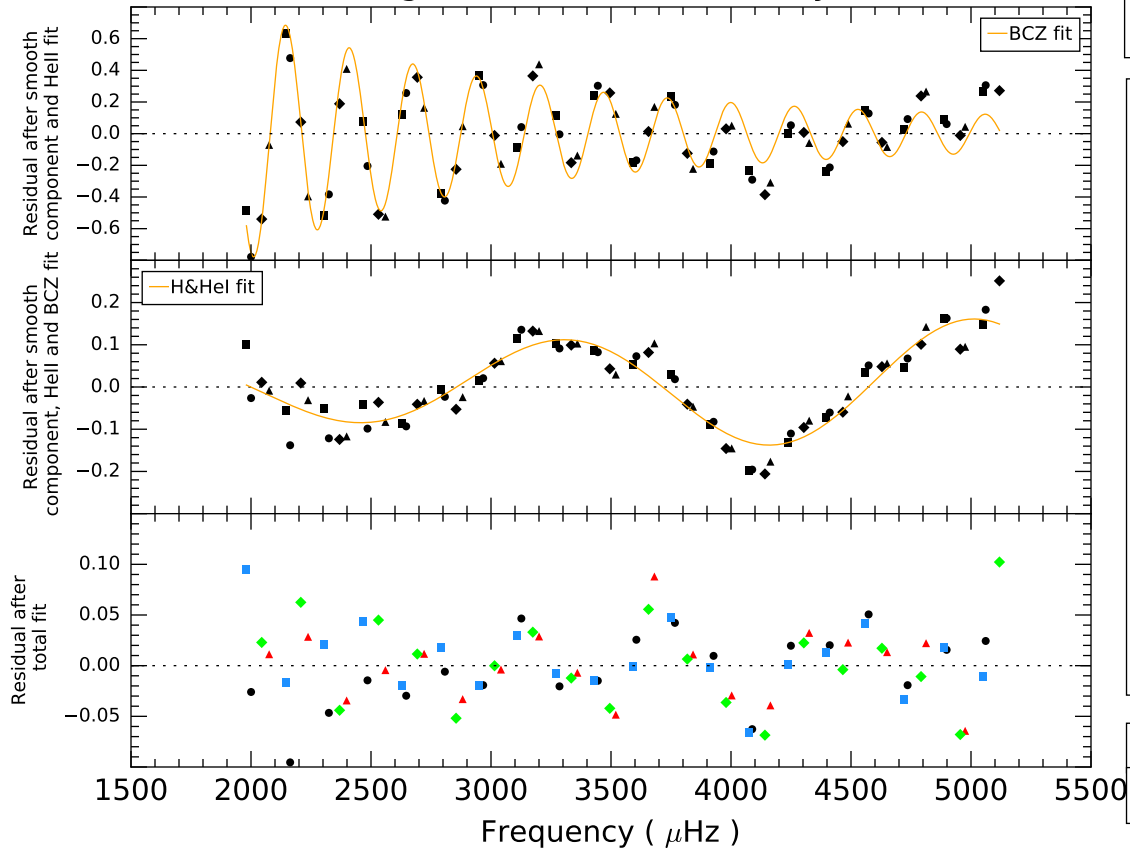
$$\tau_{\text{HI}} = 307.32 \text{ s}$$

$$\phi_{\text{HI}} = 1.3221$$

profile8

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0019654$$

Age after ZAMS: 0.039 Gyr



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

$$a_0 = -7.3889 \mu \text{ Hz}$$

$$a_1 = 0.003841$$

$$a_2 = -4.729e-07 \mu \text{ Hz}^{-1}$$

$$c_0 = 0.0020299$$

$$c_2 = 2.221e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{HeII}} = 545.74 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6258$$

$$b_2 = 3.1505e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1887.4 \text{ s}$$

$$\phi_{\text{CZ}} = 0.95148$$

$$d_0 = 3.5439e-05$$

$$d_2 = 3.86e-09 \mu \text{ Hz}^{-2}$$

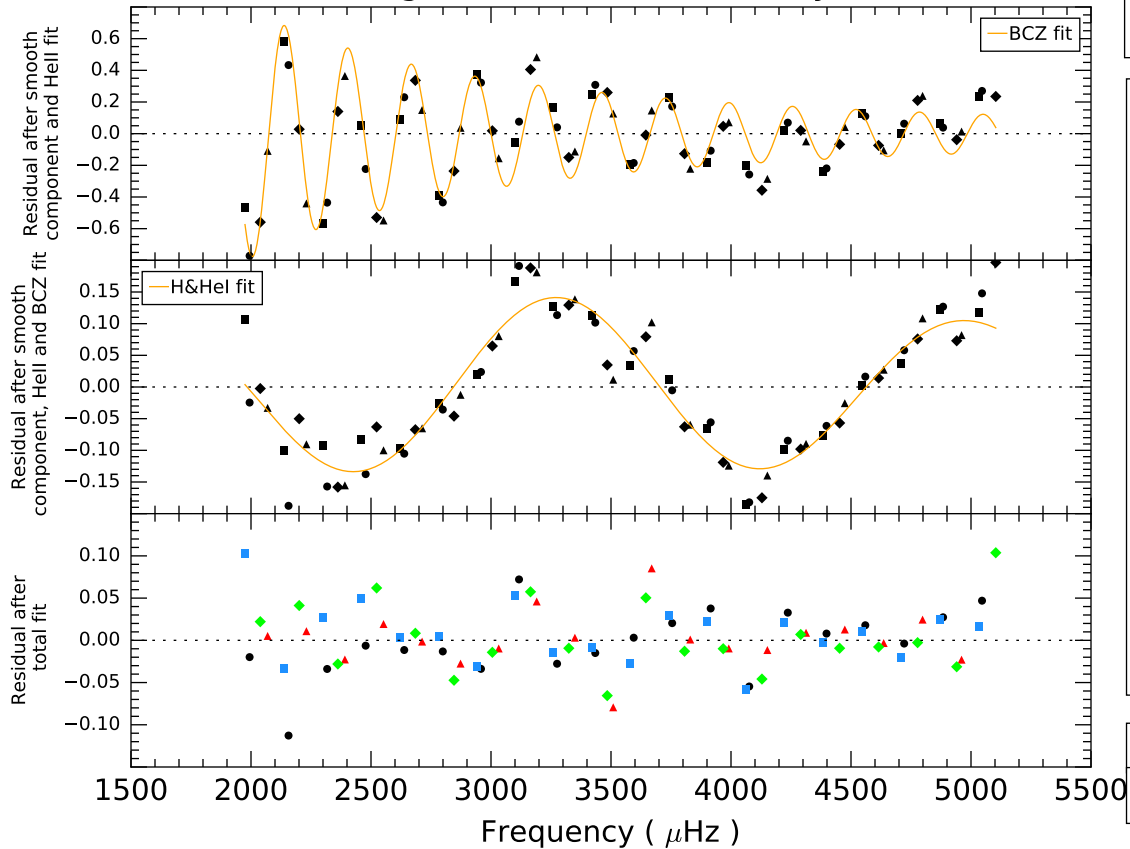
$$\tau_{\text{HI}} = 291.46 \text{ s}$$

$$\phi_{\text{HI}} = 2.1024$$

profile9

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0017533$$

Age after ZAMS: 0.068 Gyr



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

$$a_0 = -7.0868 \mu\text{Hz}$$

$$a_1 = 0.0036796$$

$$a_2 = -4.5192e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0021623$$

$$c_2 = 2.3064e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 543.02 \text{ s}$$

$$\phi_{\text{HeII}} = 3.7733$$

$$b_2 = 3.1264e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1889.4 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0304$$

$$d_0 = 7.4436e-05$$

$$d_2 = 5.0879e-08 \mu\text{Hz}^{-2}$$

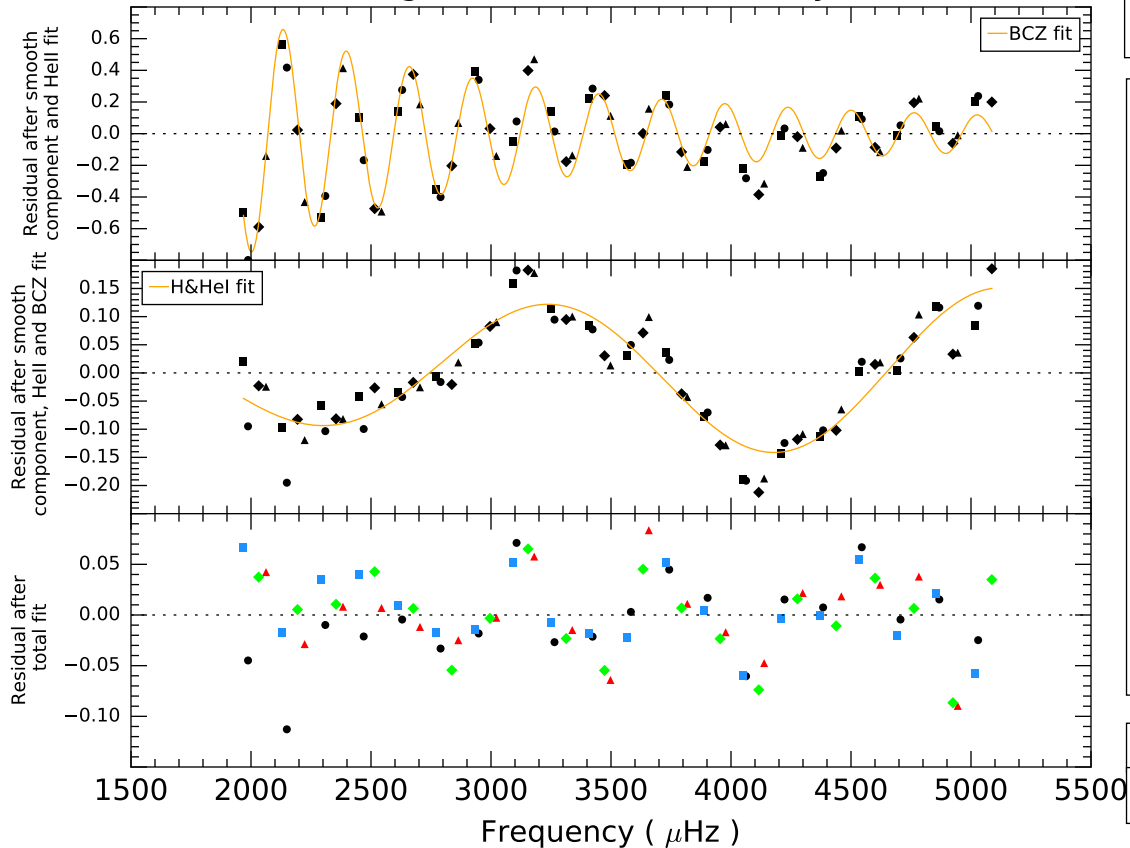
$$\tau_{\text{HI}} = 290.75 \text{ s}$$

$$\phi_{\text{HI}} = 2.1775$$

profile10

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0016992$$

Age after ZAMS: 0.118 Gyr



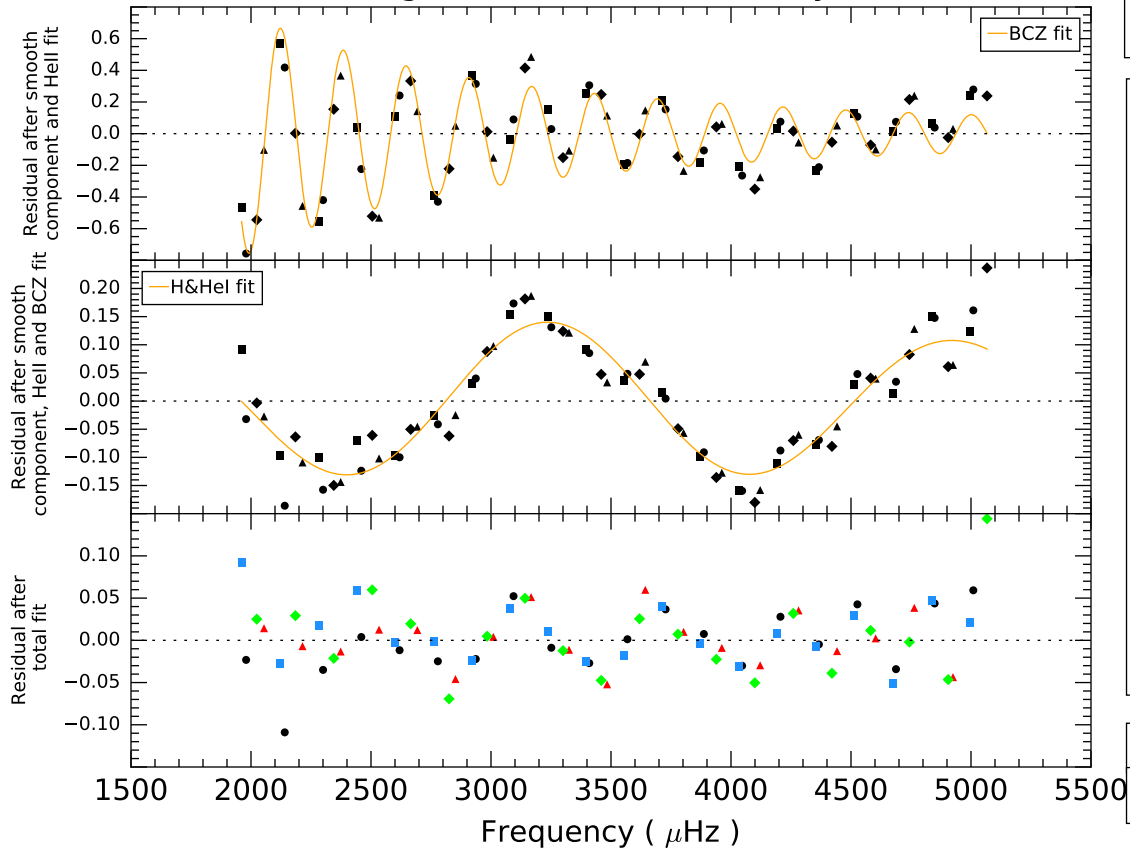
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -7.2267 \mu \text{ Hz} \\
 a_1 &= 0.0037547 \\
 a_2 &= -4.6095e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0019838 \\
 c_2 &= 2.1985e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HeII}} &= 544.64 \text{ s} \\
 \phi_{\text{HeII}} &= 3.814 \\
 b_2 &= 2.9984e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 1902.2 \text{ s} \\
 \phi_{\text{CZ}} &= 0.79716 \\
 d_0 &= 4.4468e-05 \\
 d_2 &= 1.5626e-08 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 263.0 \text{ s} \\
 \phi_{\text{HI}} &= 3.5012
 \end{aligned}$$

profile11

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0019147$$

Age after ZAMS: 0.205 Gyr



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

$$a_0 = -7.1133 \mu \text{ Hz}$$

$$a_1 = 0.0037348$$

$$a_2 = -4.6383e-07 \mu \text{ Hz}^{-2}$$

$$c_0 = 0.0021968$$

$$c_2 = 2.351e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{HeII}} = 547.52 \text{ s}$$

$$\phi_{\text{HeII}} = 3.7969$$

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

$$\tau_{\text{CZ}} = 1911.1 \text{ s}$$

$$\phi_{\text{CZ}} = 0.82701$$

$$d_0 = 7.2702e-05$$

$$d_2 = 4.9439e-08 \mu \text{ Hz}^{-2}$$

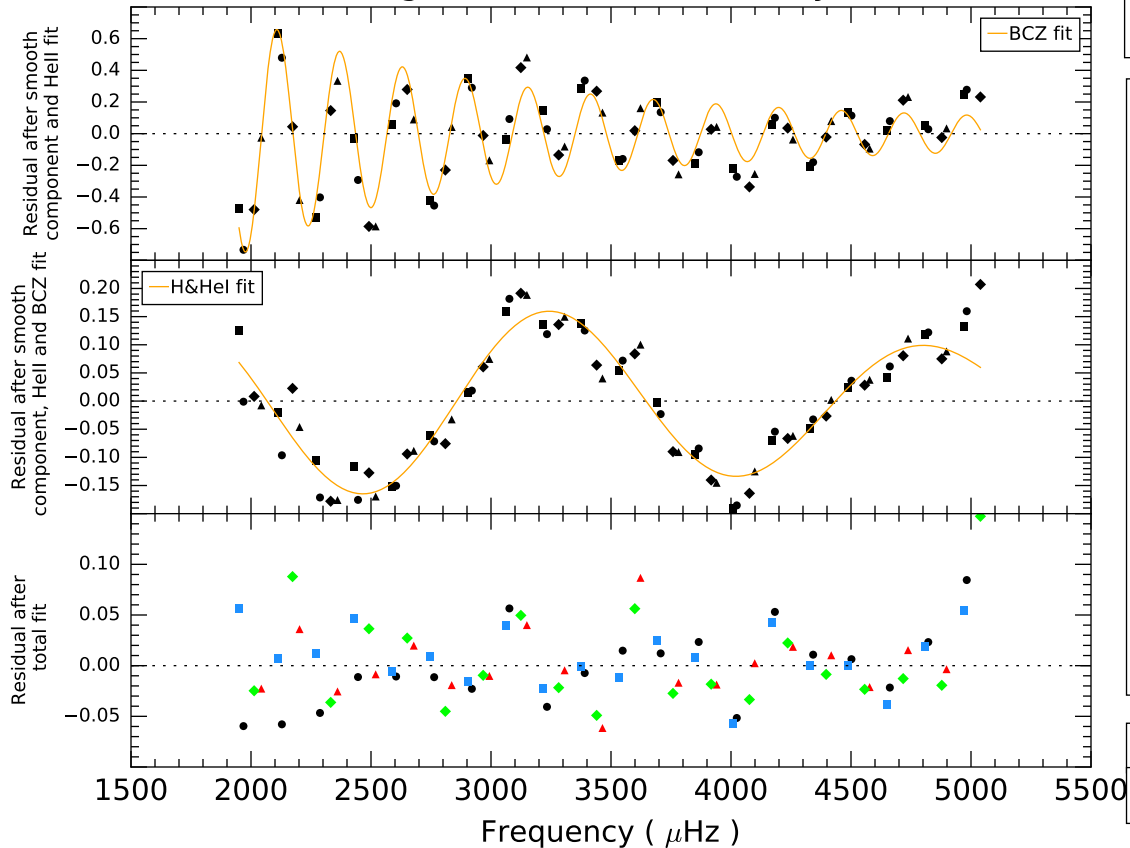
$$\tau_{\text{HI}} = 293.51 \text{ s}$$

$$\phi_{\text{HI}} = 2.1983$$

profile12

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0018061$$

Age after ZAMS: 0.354 Gyr



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

$$a_0 = -6.8681 \mu\text{Hz}$$

$$a_1 = 0.0036379$$

$$a_2 = -4.555e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0023809$$

$$c_2 = 2.4802e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 558.0 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5535$$

$$b_2 = 2.9226e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1914.0 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1038$$

$$d_0 = 0.00010165$$

$$d_2 = 6.8934e-08 \mu\text{Hz}^{-2}$$

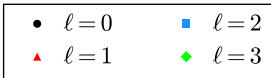
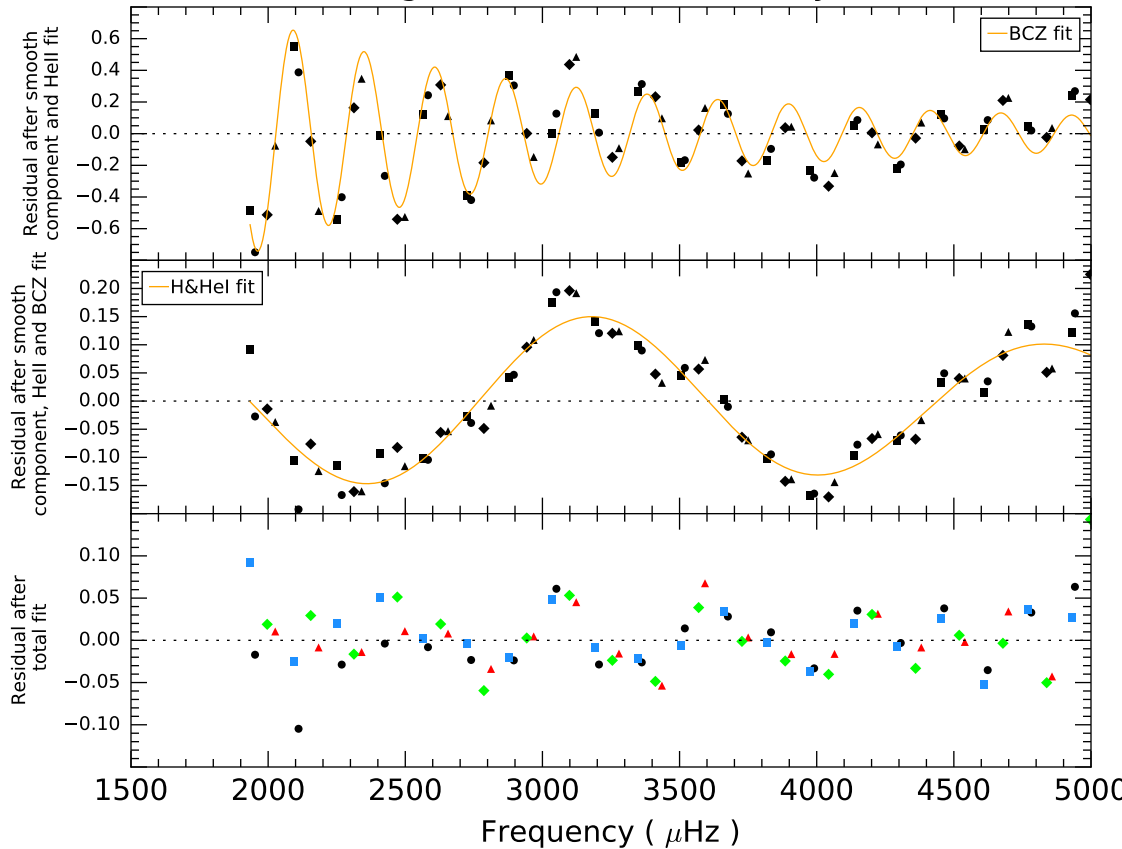
$$\tau_{\text{HI}} = 316.73 \text{ s}$$

$$\phi_{\text{HI}} = 1.1973$$

profile13

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0017581$$

Age after ZAMS: 0.610 Gyr



$$a_0 = -6.9369 \mu \text{ Hz}$$

$$a_1 = 0.0037082$$

$$a_2 = -4.6839e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0022969$$

$$c_2 = 2.4487e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 558.26 \text{ s}$$

$$\phi_{\text{HeII}} = 3.7656$$

$$b_2 = 2.8604e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1938.5 \text{ s}$$

$$\phi_{\text{CZ}} = 0.86022$$

$$d_0 = 8.7432e-05$$

$$d_2 = 6.1006e-08 \mu\text{Hz}^{-2}$$

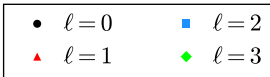
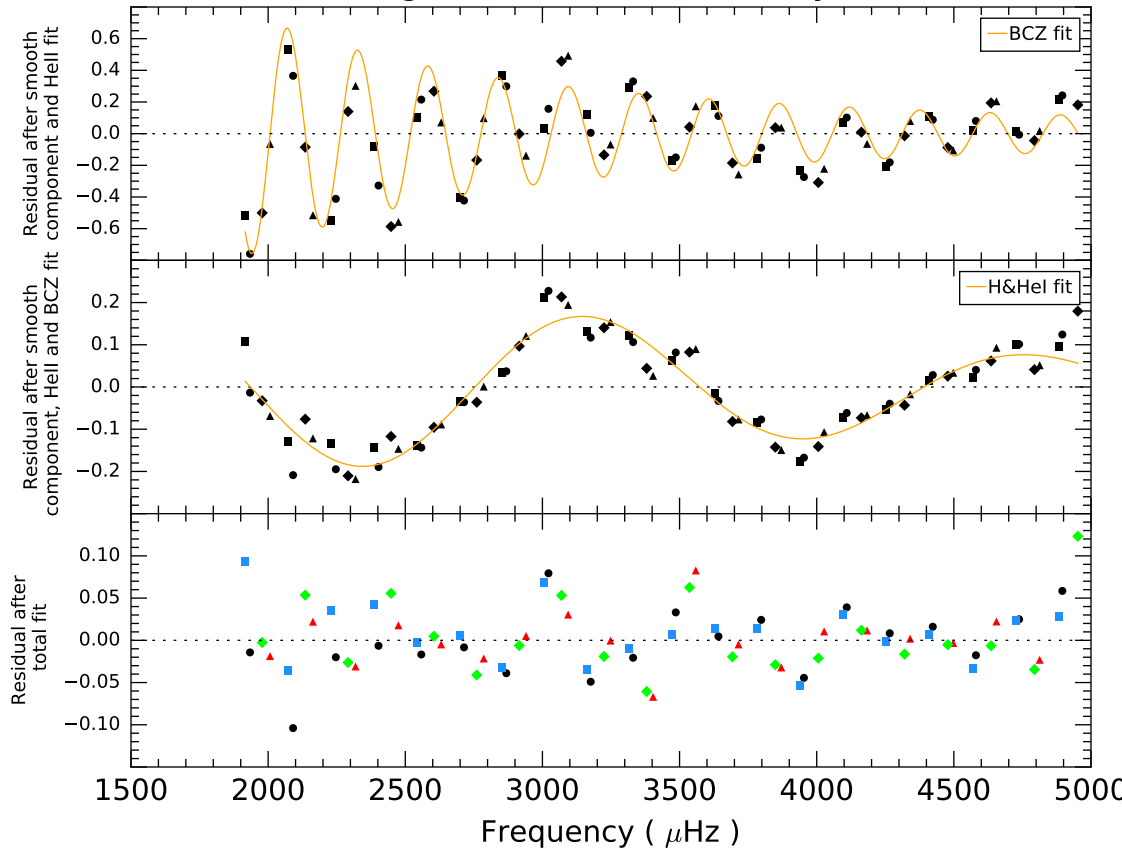
$$\tau_{\text{HI}} = 299.22 \text{ s}$$

$$\phi_{\text{HI}} = 2.1606$$

profile14

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0017273$$

Age after ZAMS: 0.910 Gyr

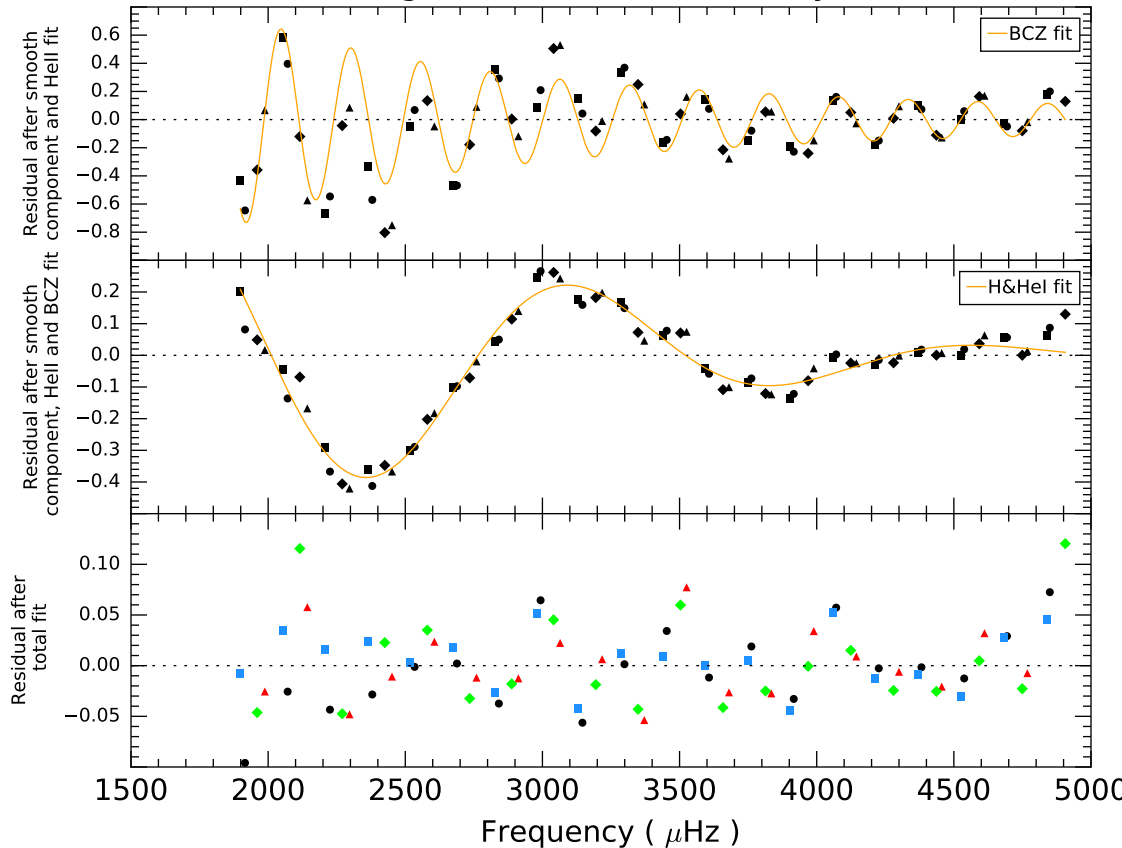


$a_0 = -6.5708 \mu \text{ Hz}$
 $a_1 = 0.0035481$
 $a_2 = -4.5197e-07 \mu\text{Hz}^{-2}$
 $c_0 = 0.0024316$
 $c_2 = 2.5539e-07 \mu\text{Hz}^{-2}$
 $\tau_{\text{HeII}} = 566.78 \text{ s}$
 $\phi_{\text{HeII}} = 3.6953$
 $b_2 = 2.854e+06 \text{ mHz}^3$
 $\tau_{\text{CZ}} = 1951.8 \text{ s}$
 $\phi_{\text{CZ}} = 1.0491$
 $d_0 = 0.00013369$
 $d_2 = 9.2966e-08 \mu\text{Hz}^{-2}$
 $\tau_{\text{HI}} = 305.56 \text{ s}$
 $\phi_{\text{HI}} = 1.9932$

profile15

$\chi^2_{\nu}(\text{dof} = 65) = 0.0017577$

Age after ZAMS: 1.210 Gyr



$$a_0 = -5.613 \mu \text{ Hz}$$

$$a_1 = 0.0030653$$

$$a_2 = -3.9301e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0032162$$

$$c_2 = 2.9439e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 577.26 \text{ s}$$

$$\phi_{\text{HeII}} = 3.5128$$

$$b_2 = 2.696e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1968.5 \text{ s}$$

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

$$d_0 = 0.00050824$$

$$d_2 = 2.0245e-07 \mu\text{Hz}^{-2}$$

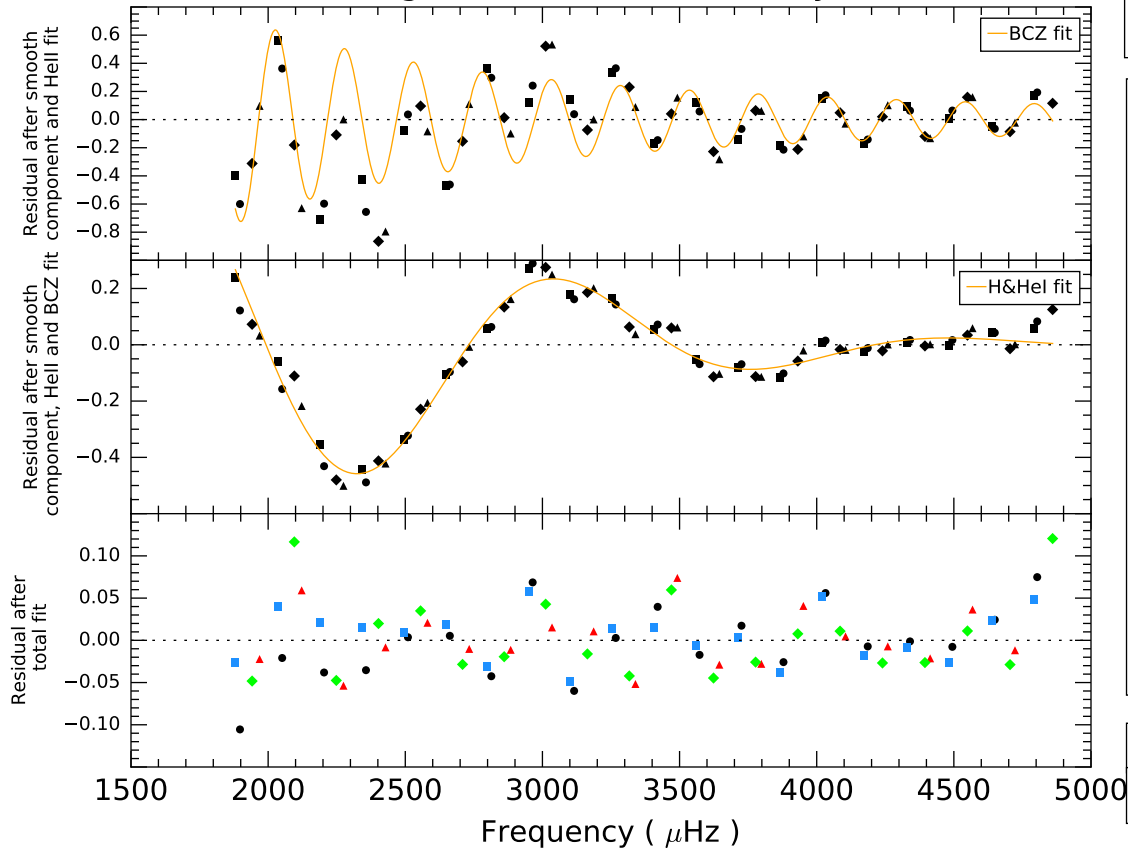
$$\tau_{\text{HI}} = 331.02 \text{ s}$$

$$\phi_{\text{HI}} = 1.0625$$

profile16

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0018259$$

Age after ZAMS: 1.510 Gyr



$$a_0 = -5.3141 \mu \text{ Hz}$$

$$a_1 = 0.002943$$

$$a_2 = -3.8185e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0035069$$

$$c_2 = 3.0882e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 583.61 \text{ s}$$

$$\phi_{\text{HeII}} = 3.523$$

$$b_2 = 2.6179e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 1988.5 \text{ s}$$

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

$$d_0 = 0.00072716$$

$$d_2 = 2.3931e-07 \mu\text{Hz}^{-2}$$

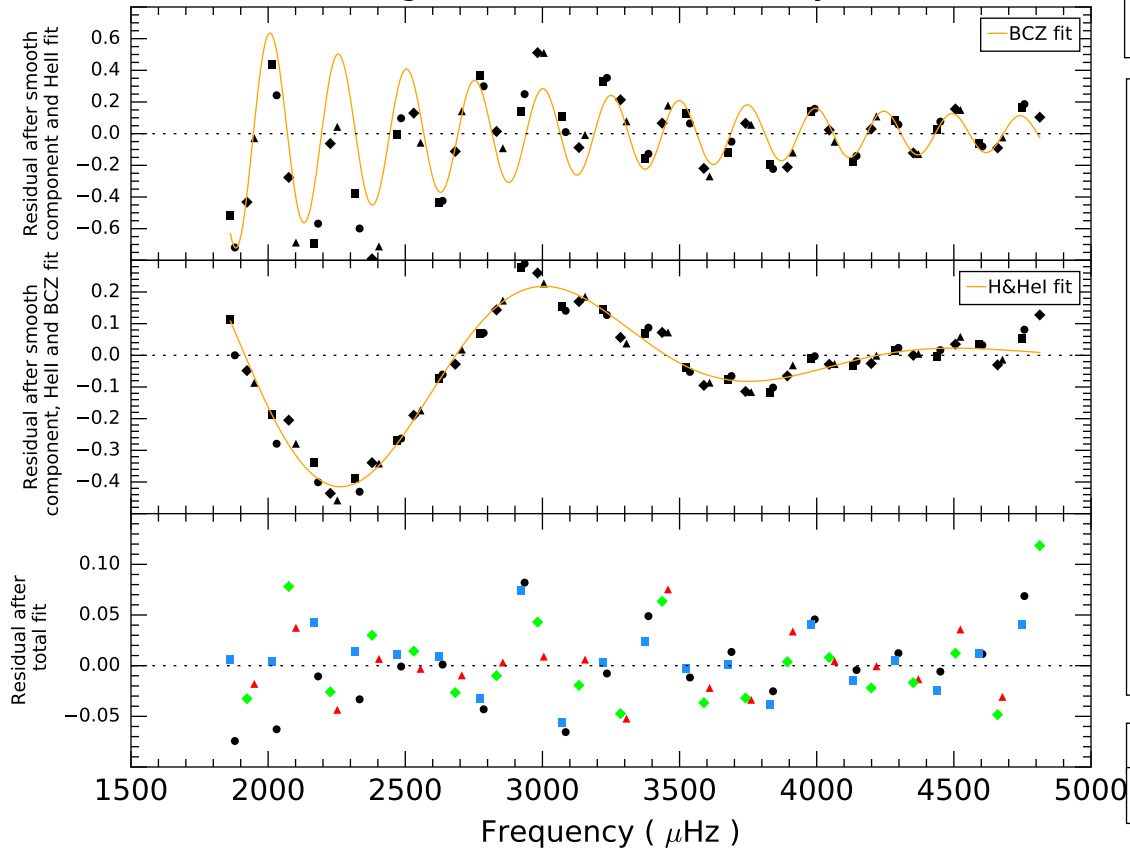
$$\tau_{\text{HI}} = 338.09 \text{ s}$$

$$\phi_{\text{HI}} = 0.9633$$

profile17

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0019199$$

Age after ZAMS: 1.810 Gyr



$$a_0 = -5.2875 \mu\text{Hz}$$

$$a_1 = 0.002961$$

$$a_2 = -3.8835e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.00318$$

$$c_2 = 2.9977e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 589.11 \text{ s}$$

$$\phi_{\text{HeII}} = 3.6158$$

$$b_2 = 2.5603e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2011.4 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0761$$

$$d_0 = 0.00060683$$

$$d_2 = 2.315e-07 \mu\text{Hz}^{-2}$$

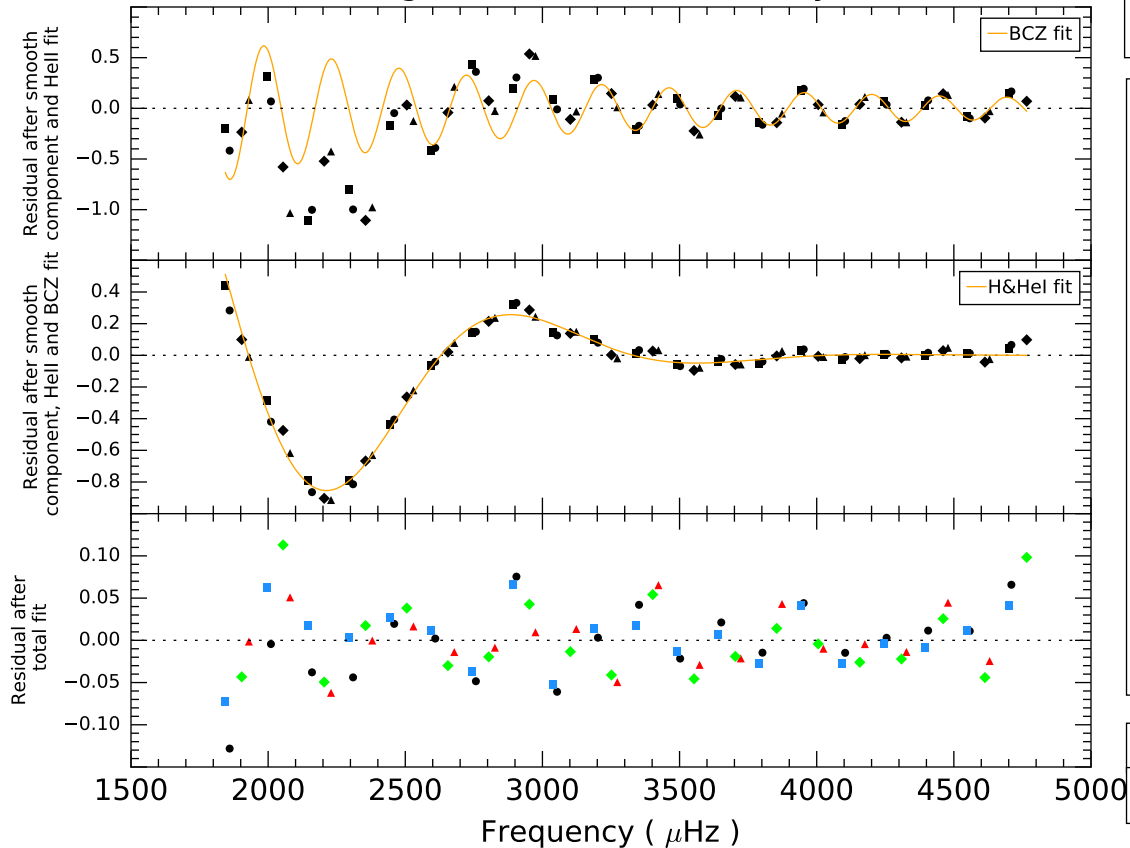
$$\tau_{\text{HI}} = 325.25 \text{ s}$$

$$\phi_{\text{HI}} = 1.5977$$

profile18

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0016597$$

Age after ZAMS: 2.110 Gyr



$$a_0 = -4.2881 \mu \text{ Hz}$$

$$a_1 = 0.0024644$$

$$a_2 = -3.2851e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0046985$$

$$c_2 = 3.4454e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 586.3 \text{ s}$$

$$\phi_{\text{HeII}} = 3.8925$$

$$b_2 = 2.4312e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2031.2 \text{ s}$$

$$\phi_{\text{CZ}} = 1.152$$

$$d_0 = 0.0030584$$

$$d_2 = 4.1356e-07 \mu\text{Hz}^{-2}$$

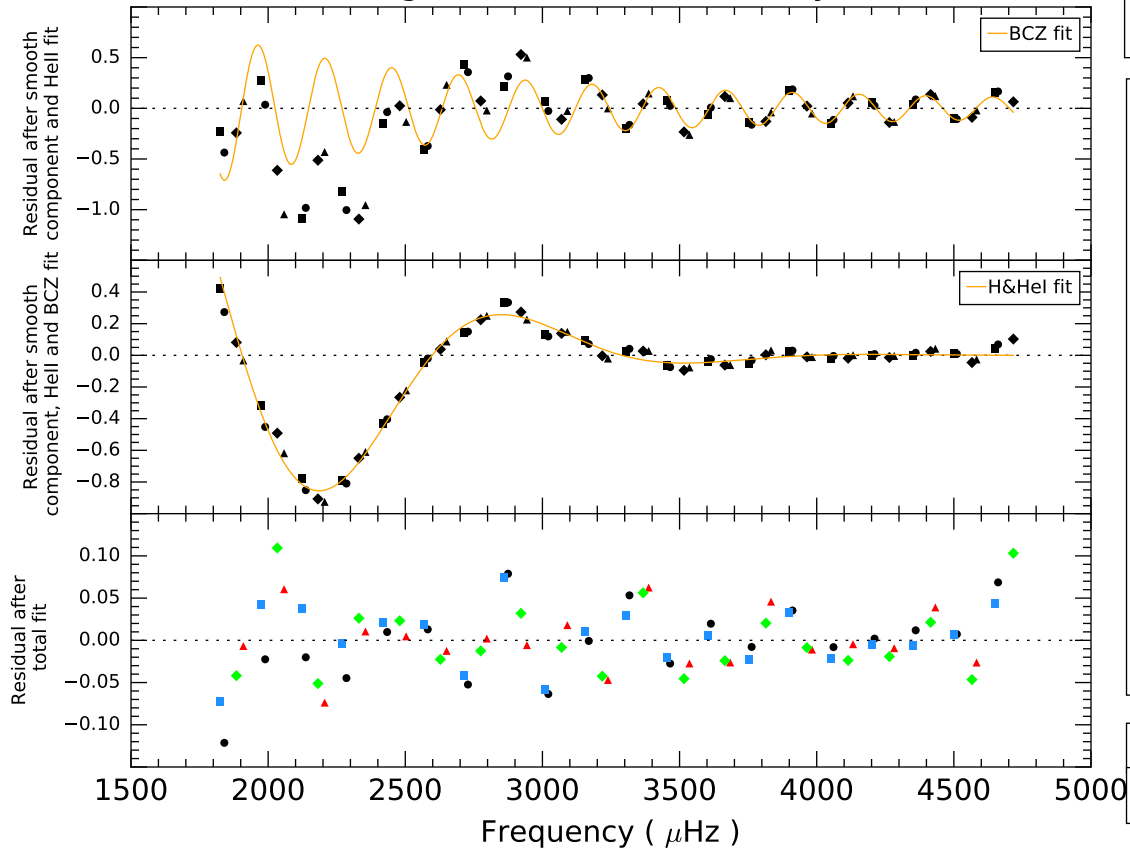
$$\tau_{\text{HI}} = 356.5 \text{ s}$$

$$\phi_{\text{HI}} = 0.78623$$

profile19

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0019846$$

Age after ZAMS: 2.410 Gyr



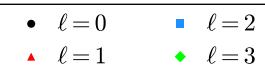
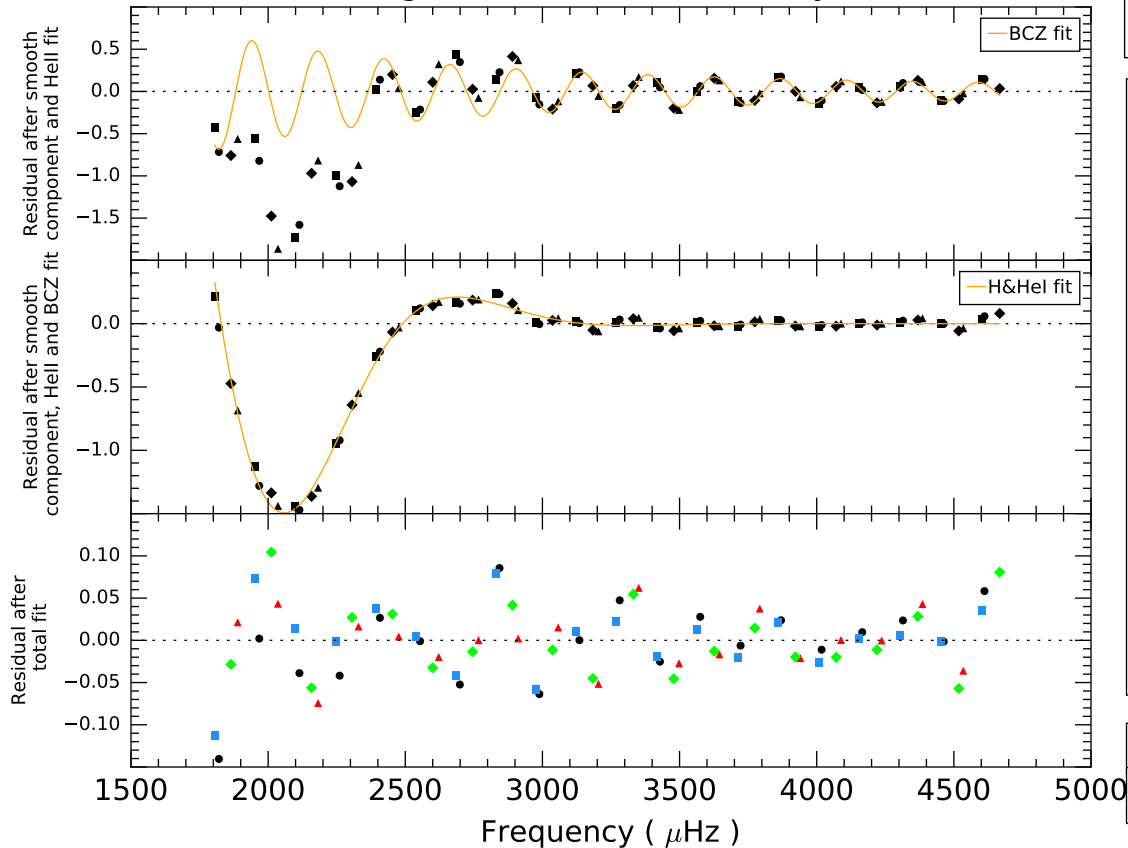
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -4.1881 \mu \text{ Hz} \\
 a_1 &= 0.0024459 \\
 a_2 &= -3.3085e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0047229 \\
 c_2 &= 3.5169e-07 \mu \text{ Hz}^{-2} \\
 \tau_{HeII} &= 595.66 \text{ s} \\
 \phi_{HeII} &= 3.8454 \\
 b_2 &= 2.4083e+06 \text{ mHz}^3 \\
 \tau_{CZ} &= 2054.1 \text{ s} \\
 \phi_{CZ} &= 1.1321 \\
 d_0 &= 0.0031123 \\
 d_2 &= 4.2454e-07 \mu \text{ Hz}^{-2} \\
 \tau_{HI} &= 361.2 \text{ s} \\
 \phi_{HI} &= 0.77738
 \end{aligned}$$

profile20

$$\chi^2_\nu(\text{dof} = 65) = 0.0020025$$

Age after ZAMS: 2.710 Gyr



$$\begin{aligned} a_0 &= -3.3432 \mu \text{ Hz} \\ a_1 &= 0.0020328 \\ a_2 &= -2.8188e-07 \mu \text{ Hz}^{-2} \end{aligned}$$

$$\begin{aligned} c_0 &= 0.0054755 \\ c_2 &= 3.5922e-07 \mu \text{ Hz}^{-2} \\ \tau_{\text{HeII}} &= 585.0 \text{ s} \\ \phi_{\text{HeII}} &= 4.5605 \end{aligned}$$

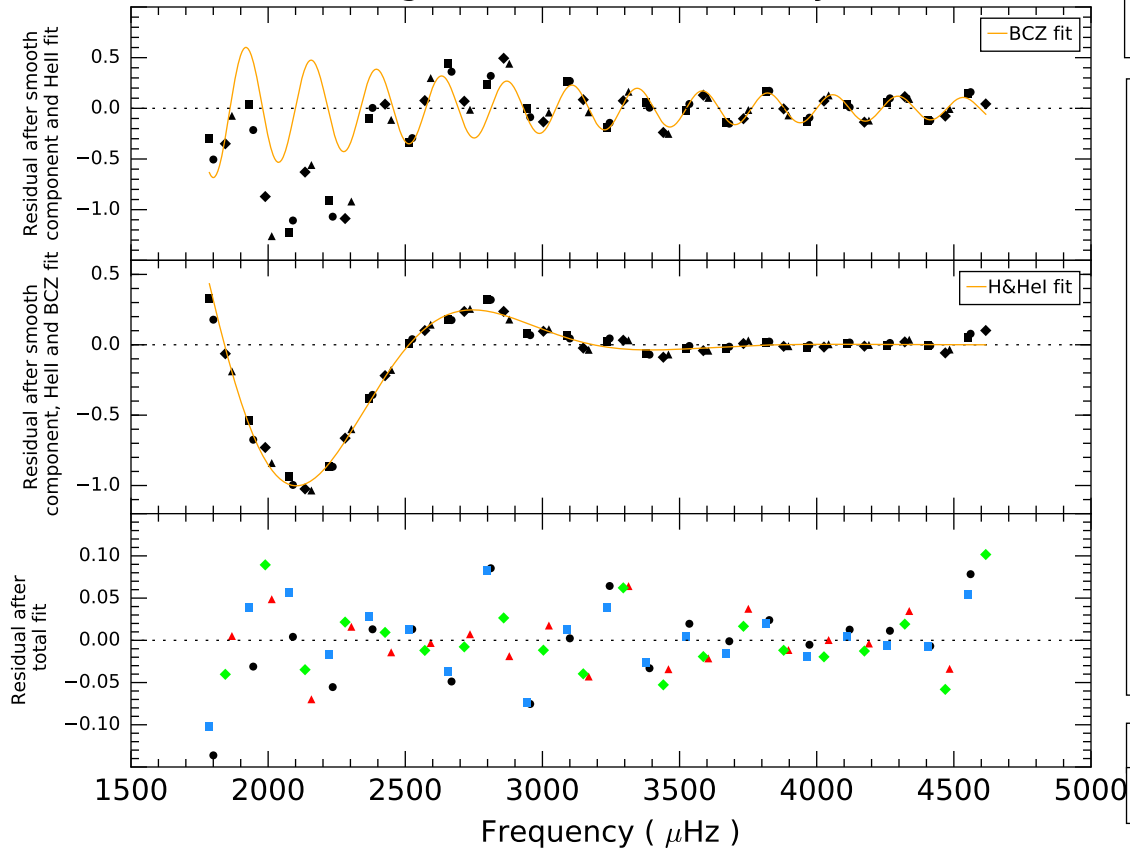
$$\begin{aligned} b_2 &= 2.2727e+06 \text{ mHz}^3 \\ \tau_{\text{CZ}} &= 2077.4 \text{ s} \\ \phi_{\text{CZ}} &= 1.1455 \end{aligned}$$

$$\begin{aligned} d_0 &= 0.01684 \\ d_2 &= 7.138e-07 \mu \text{ Hz}^{-2} \\ \tau_{\text{HI}} &= 377.84 \text{ s} \\ \phi_{\text{HI}} &= 0.7429 \end{aligned}$$

profile21

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0021713$$

Age after ZAMS: 3.010 Gyr



$$a_0 = -3.7529 \mu\text{Hz}$$

$$a_1 = 0.0022804$$

$$a_2 = -3.1878e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.004983$$

$$c_2 = 3.6718e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 609.56 \text{ s}$$

$$\phi_{\text{HeII}} = 3.9581$$

$$b_2 = 2.2165e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2104.0 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0595$$

$$d_0 = 0.004915$$

$$d_2 = 5.1386e-07 \mu\text{Hz}^{-2}$$

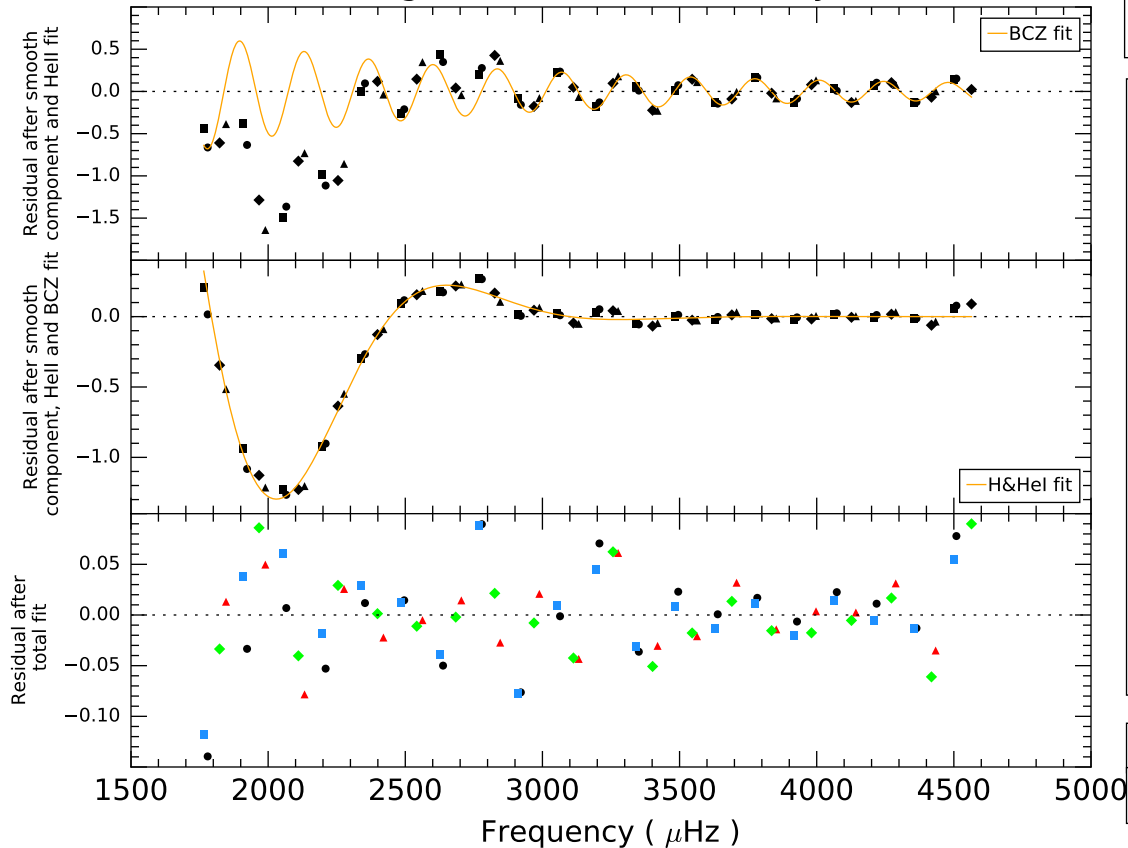
$$\tau_{\text{HI}} = 371.74 \text{ s}$$

$$\phi_{\text{HI}} = 0.82586$$

profile22

$$\chi^2_{\nu}(\text{dof} = 65) = 0.002204$$

Age after ZAMS: 3.310 Gyr



$$a_0 = -3.2961 \mu \text{ Hz}$$

$$a_1 = 0.0020677$$

$$a_2 = -2.9557e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0053643$$

$$c_2 = 3.756e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 610.33 \text{ s}$$

$$\phi_{\text{HeII}} = 4.265$$

$$b_2 = 2.152e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2130.1 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0485$$

$$d_0 = 0.010984$$

$$d_2 = 6.6693e-07 \mu\text{Hz}^{-2}$$

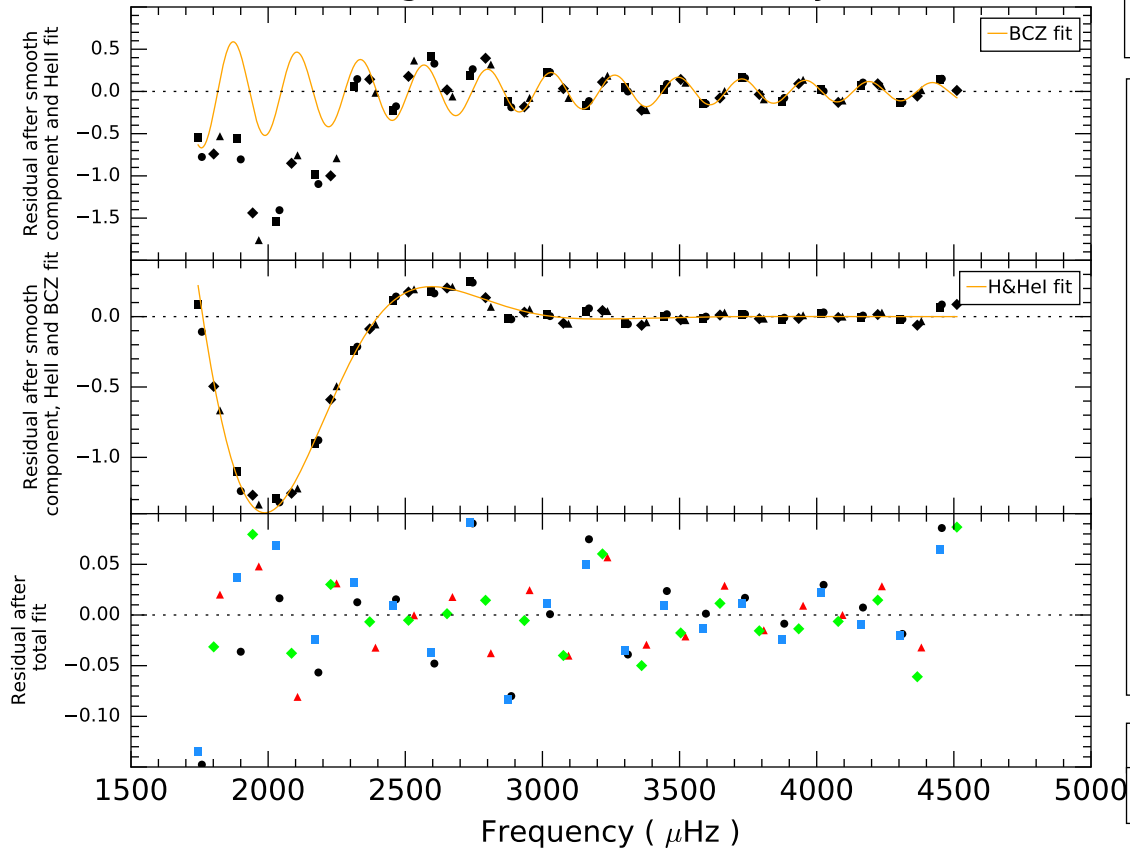
$$\tau_{\text{HI}} = 382.82 \text{ s}$$

$$\phi_{\text{HI}} = 0.7981$$

profile23

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0023398$$

Age after ZAMS: 3.610 Gyr



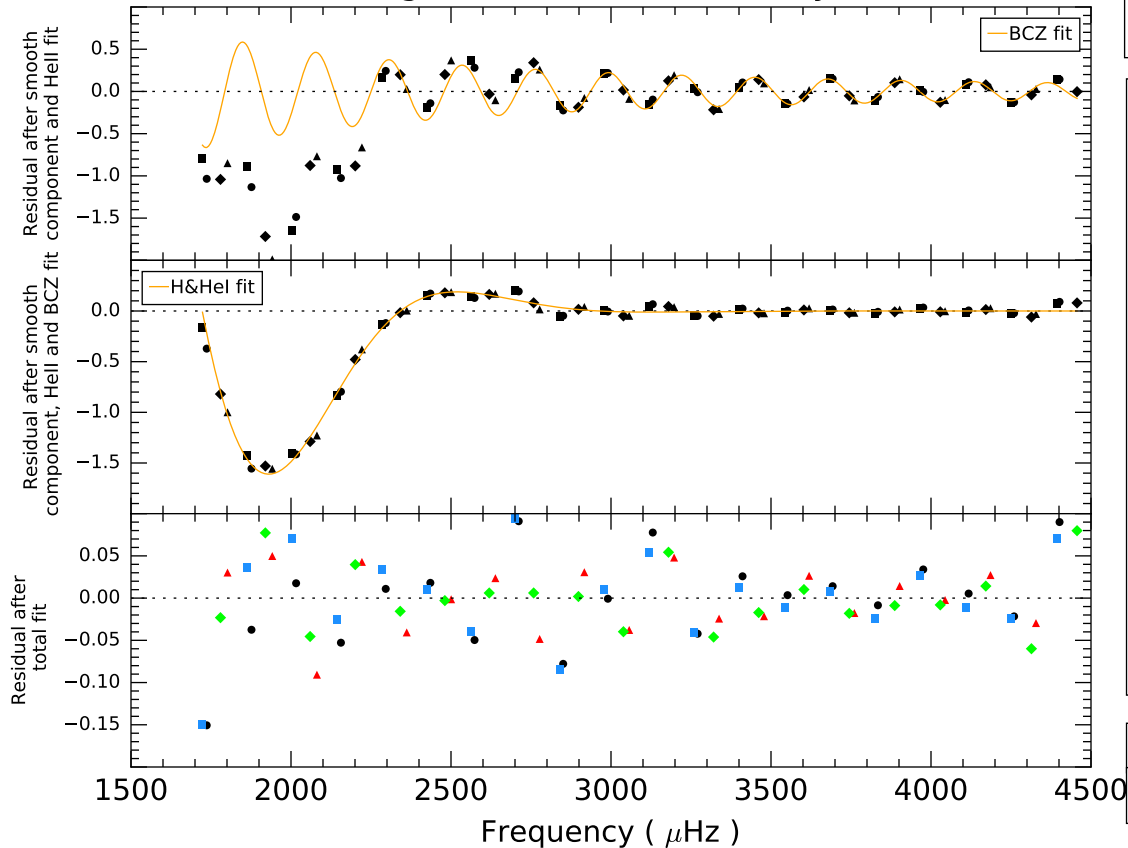
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -3.1026 \mu \text{ Hz} \\
 a_1 &= 0.0019953 \\
 a_2 &= -2.9093e-07 \mu\text{Hz}^{-2} \\
 c_0 &= 0.0054829 \\
 c_2 &= 3.8453e-07 \mu\text{Hz}^{-2} \\
 \tau_{\text{HeII}} &= 617.98 \text{ s} \\
 \phi_{\text{HeII}} &= 4.3396 \\
 b_2 &= 2.0656e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 2158.1 \text{ s} \\
 \phi_{\text{CZ}} &= 1.0128 \\
 d_0 &= 0.014371 \\
 d_2 &= 7.367e-07 \mu\text{Hz}^{-2} \\
 \tau_{\text{HI}} &= 391.13 \text{ s} \\
 \phi_{\text{HI}} &= 0.76689
 \end{aligned}$$

profile24

$$\chi^2_\nu(\text{dof} = 65) = 0.0025495$$

Age after ZAMS: 3.910 Gyr



$$a_0 = -2.8375 \mu\text{Hz}$$

$$a_1 = 0.0018835$$

$$a_2 = -2.8112e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0056552$$

$$c_2 = 3.9401e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 622.57 \text{ s}$$

$$\phi_{\text{HeII}} = 4.5496$$

$$b_2 = 2.0011e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2187.3 \text{ s}$$

$$\phi_{\text{CZ}} = 0.99123$$

$$d_0 = 0.025423$$

$$d_2 = 8.7944e-07 \mu\text{Hz}^{-2}$$

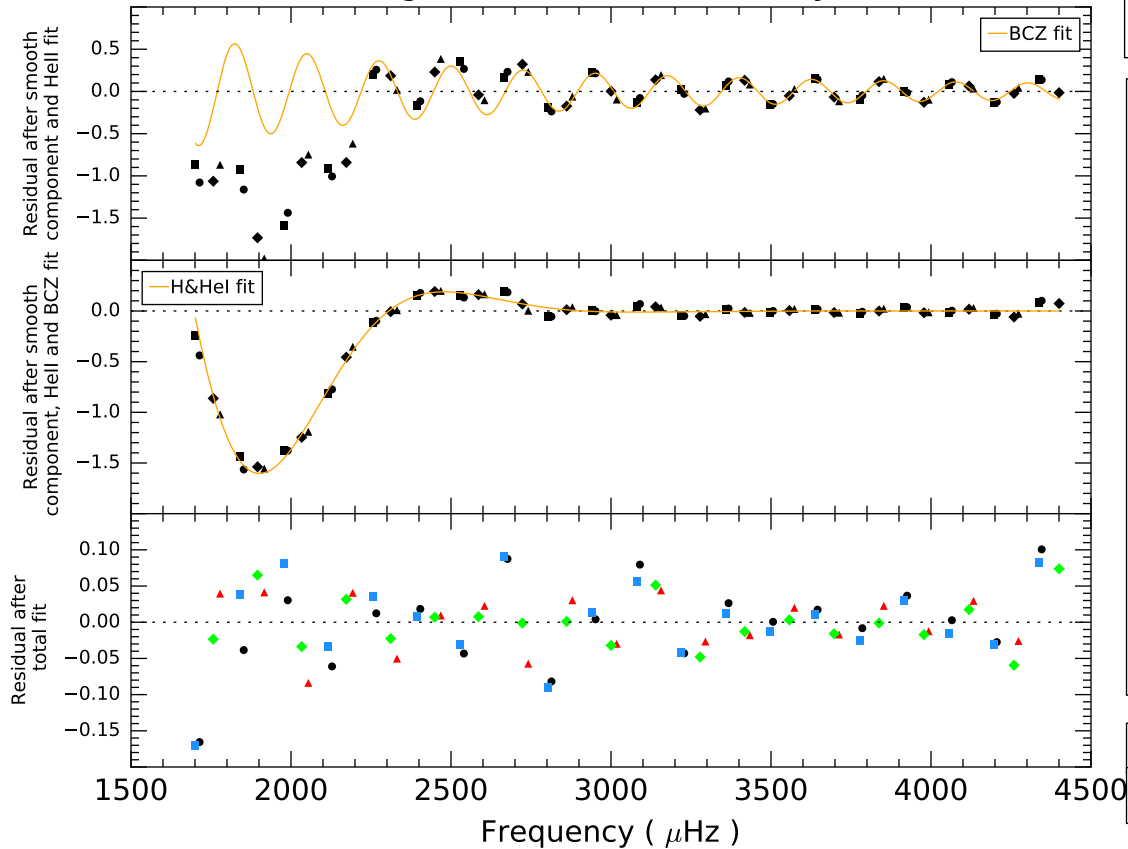
$$\tau_{\text{HI}} = 403.76 \text{ s}$$

$$\phi_{\text{HI}} = 0.68455$$

profile25

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0027356$$

Age after ZAMS: 4.210 Gyr



$$a_0 = -2.7487 \mu \text{ Hz}$$

$$a_1 = 0.001866$$

$$a_2 = -2.8401e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0056902$$

$$c_2 = 4.0412e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 634.01 \text{ s}$$

$$\phi_{\text{HeII}} = 4.5158$$

$$b_2 = 1.8828e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2219.9 \text{ s}$$

$$\phi_{\text{CZ}} = 0.91331$$

$$d_0 = 0.025748$$

$$d_2 = 9.0712e-07 \mu\text{Hz}^{-2}$$

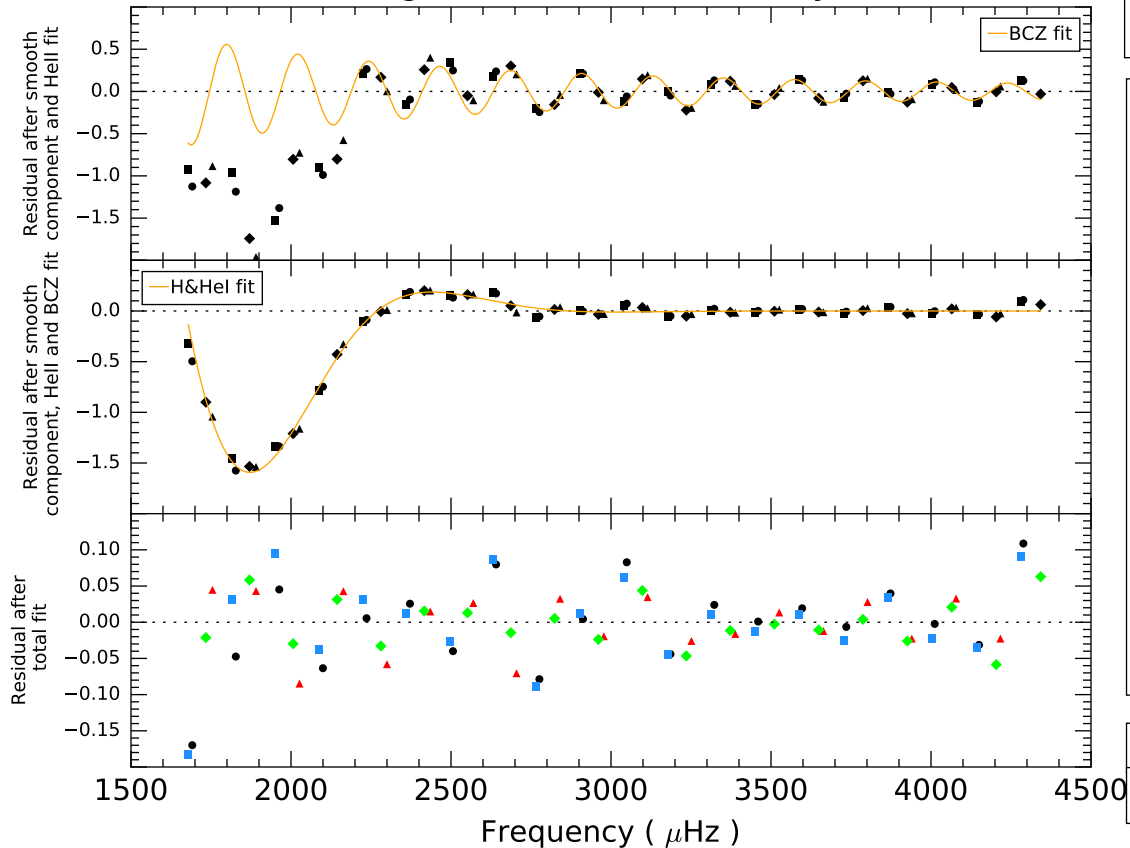
$$\tau_{\text{HI}} = 411.25 \text{ s}$$

$$\phi_{\text{HI}} = 0.65432$$

profile26

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0029731$$

Age after ZAMS: 4.510 Gyr



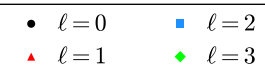
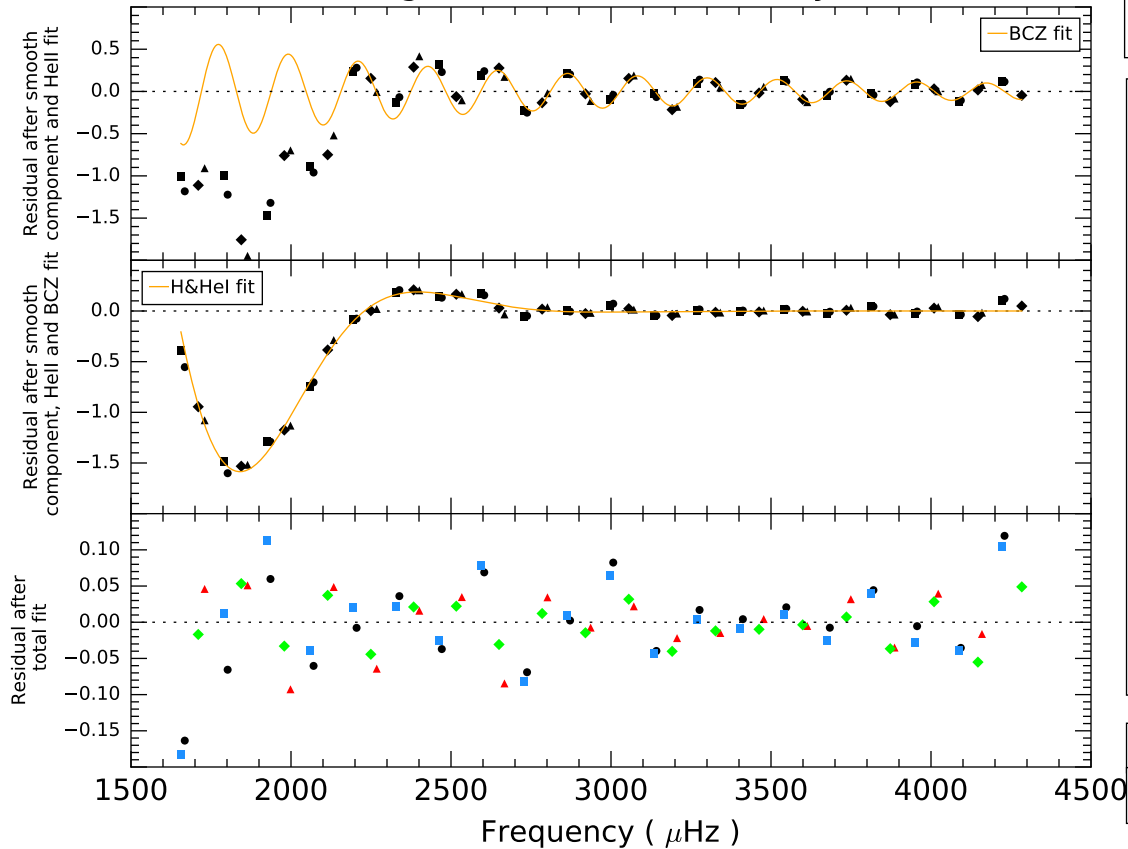
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -2.6395 \mu \text{ Hz} \\
 a_1 &= 0.0018365 \\
 a_2 &= -2.8539e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0057092 \\
 c_2 &= 4.149e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HeII}} &= 646.25 \text{ s} \\
 \phi_{\text{HeII}} &= 4.4761 \\
 b_2 &= 1.8054e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 2254.7 \text{ s} \\
 \phi_{\text{CZ}} &= 0.82697 \\
 d_0 &= 0.026093 \\
 d_2 &= 9.3716e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 417.73 \text{ s} \\
 \phi_{\text{HI}} &= 0.65382
 \end{aligned}$$

profile27

$$\chi^2_\nu(\text{dof} = 65) = 0.0031695$$

Age after ZAMS: 4.810 Gyr



$$a_0 = -2.5625 \mu \text{ Hz}$$

$$a_1 = 0.0018268$$

$$a_2 = -2.8997e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0057353$$

$$c_2 = 4.2641e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 658.44 \text{ s}$$

$$\phi_{\text{HeII}} = 4.4606$$

$$b_2 = 1.7547e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2292.3 \text{ s}$$

$$\phi_{\text{CZ}} = 0.72171$$

$$d_0 = 0.026455$$

$$d_2 = 9.7005e-07 \mu\text{Hz}^{-2}$$

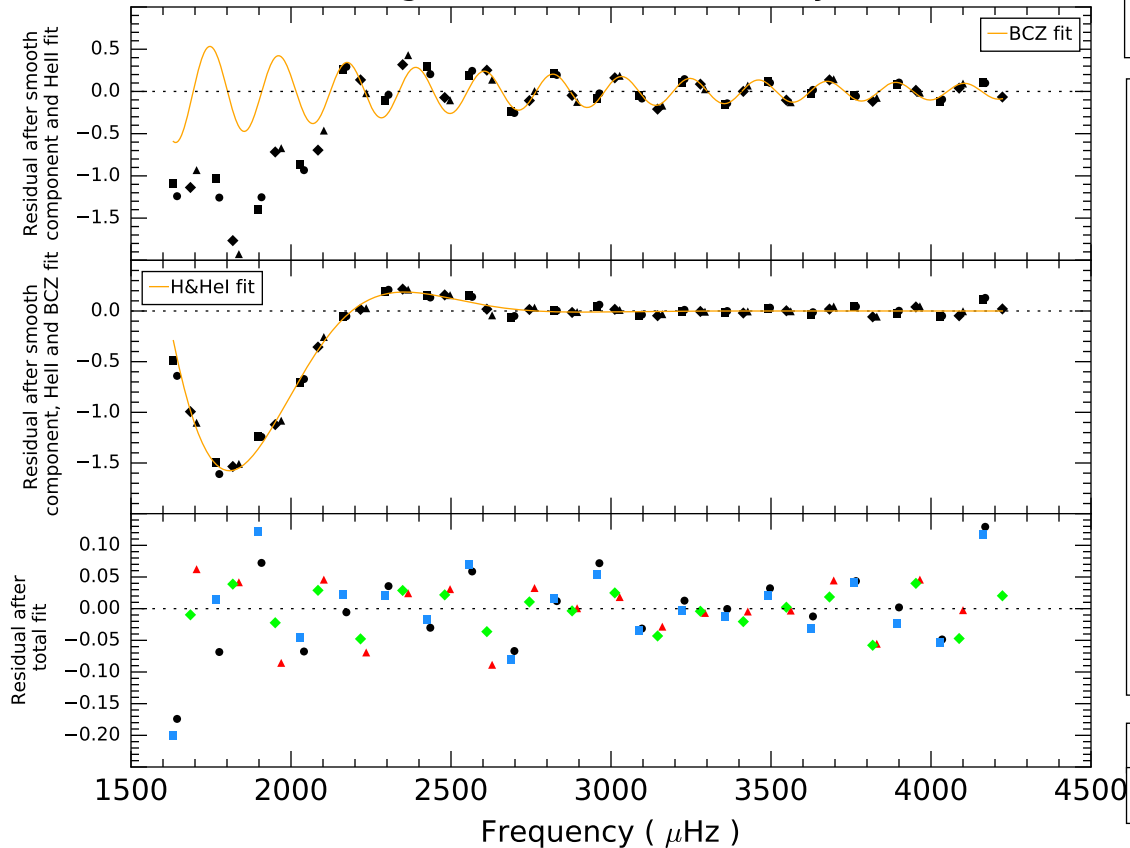
$$\tau_{\text{HI}} = 426.72 \text{ s}$$

$$\phi_{\text{HI}} = 0.61211$$

profile28

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0033222$$

Age after ZAMS: 5.110 Gyr



$$a_0 = -2.4697 \mu \text{ Hz}$$

$$a_1 = 0.0018074$$

$$a_2 = -2.934e-07 \mu \text{ Hz}^{-1}$$

$$c_0 = 0.0057525$$

$$c_2 = 4.3874e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{HeII}} = 671.45 \text{ s}$$

$$\phi_{\text{HeII}} = 4.4424$$

$$b_2 = 1.6295e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2333.7 \text{ s}$$

$$\phi_{\text{CZ}} = 0.57677$$

$$d_0 = 0.026835$$

$$d_2 = 1.0059e-06 \mu \text{ Hz}^{-2}$$

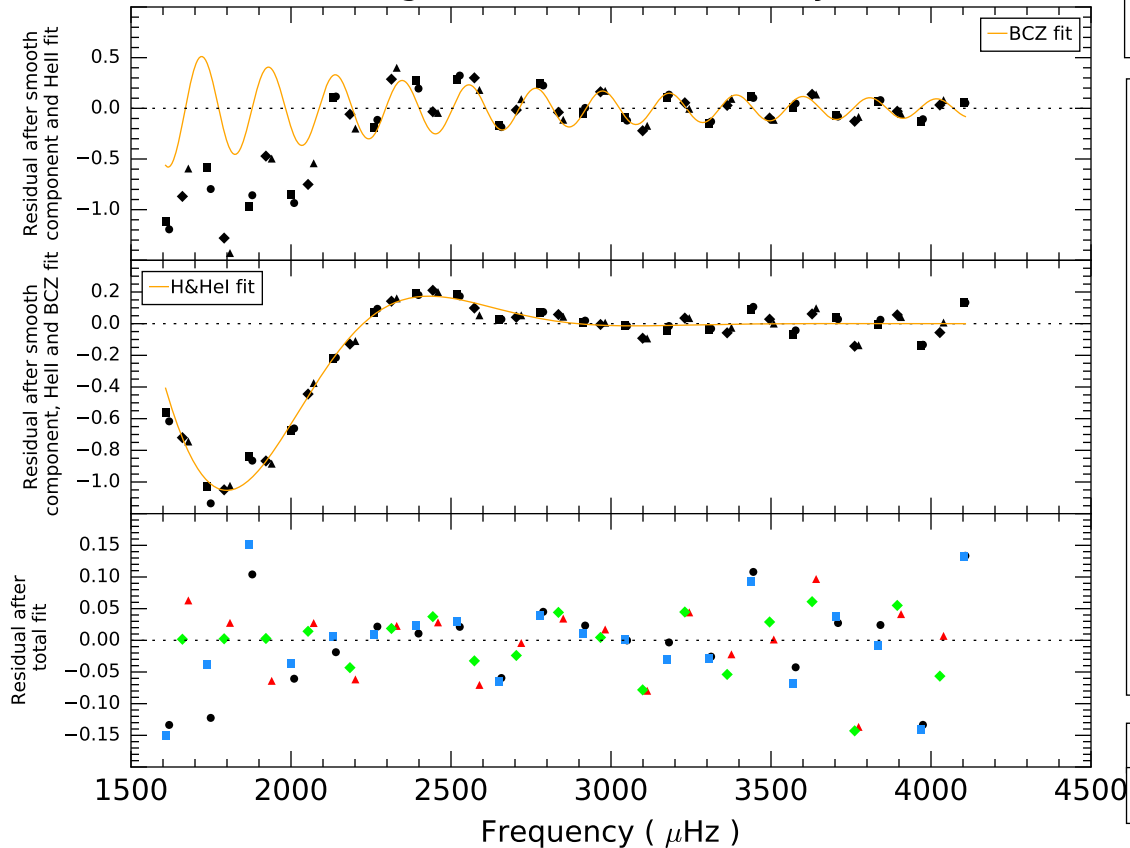
$$\tau_{\text{HI}} = 434.63 \text{ s}$$

$$\phi_{\text{HI}} = 0.60678$$

profile29

$$\chi^2_{\nu}(\text{dof} = 65) = 0.0036234$$

Age after ZAMS: 5.410 Gyr

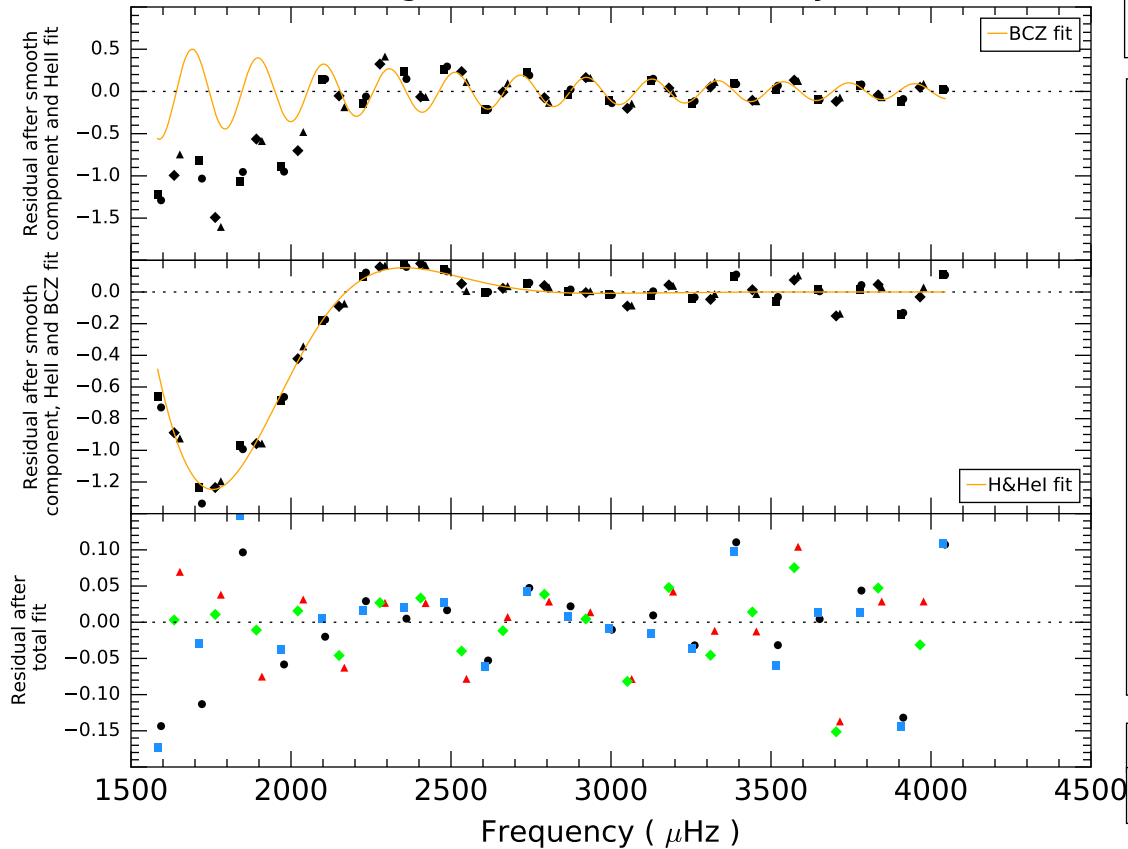


• $\ell = 0$	■ $\ell = 2$
▲ $\ell = 1$	◆ $\ell = 3$

$a_0 = -2.3459 \mu \text{ Hz}$
$a_1 = 0.0017383$
$a_2 = -2.8523e-07 \mu\text{Hz}^{-2}$
$c_0 = 0.0044828$
$c_2 = 4.2747e-07 \mu\text{Hz}^{-2}$
$\tau_{\text{HeII}} = 700.29 \text{ s}$
$\phi_{\text{HeII}} = 3.9649$
$b_2 = 1.5164e+06 \text{ mHz}^3$
$\tau_{\text{CZ}} = 2395.5 \text{ s}$
$\phi_{\text{CZ}} = 2.6979e-12$
$d_0 = 0.0072766$
$d_2 = 7.4916e-07 \mu\text{Hz}^{-2}$
$\tau_{\text{HI}} = 373.5 \text{ s}$
$\phi_{\text{HI}} = 2.1215$

profile30
$\chi^2_{\nu}(\text{dof} = 64) = 0.0050718$

Age after ZAMS: 5.710 Gyr



$$a_0 = -2.0022 \mu \text{ Hz}$$

$$a_1 = 0.0015706$$

$$a_2 = -2.6748e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0049458$$

$$c_2 = 4.5199e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 710.39 \text{ s}$$

$$\phi_{HeII} = 4.0908$$

$$b_2 = 1.4332e+06 \text{ mHz}^3$$

$$\tau_{CZ} = 2437.1 \text{ s}$$

$$\phi_{CZ} = 4.5671e-31$$

$$d_0 = 0.013846$$

$$d_2 = 9.229e-07 \mu\text{Hz}^{-2}$$

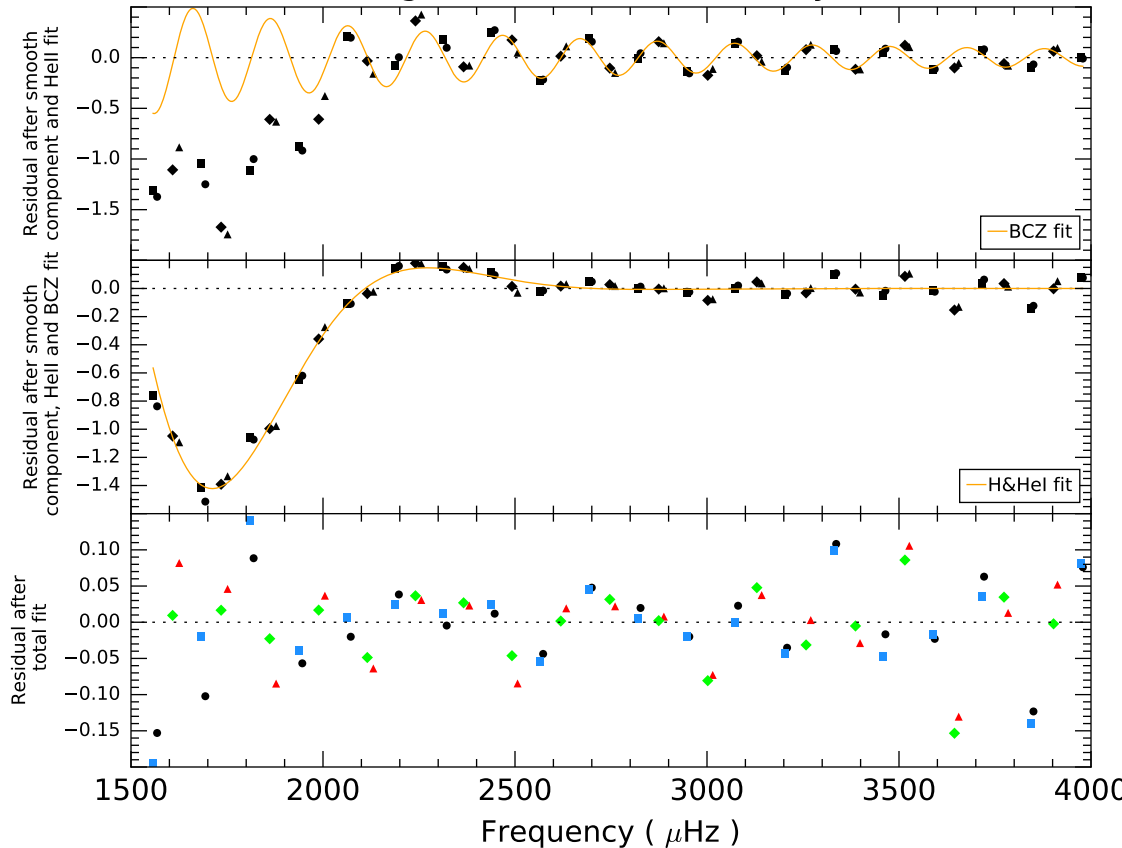
$$\tau_{HI} = 393.91 \text{ s}$$

$$\phi_{HI} = 1.8151$$

profile31

$$\chi^2_\nu (\text{dof} = 64) = 0.0050386$$

Age after ZAMS: 6.010 Gyr



$$a_0 = -1.8108 \mu \text{ Hz}$$

$$a_1 = 0.0014916$$

$$a_2 = -2.6285e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0054608$$

$$c_2 = 4.7922e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 721.57 \text{ s}$$

$$\phi_{\text{HeII}} = 4.2117$$

$$b_2 = 1.3437e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2481.3 \text{ s}$$

$$\phi_{\text{CZ}} = 9.537e-31$$

$$d_0 = 0.023384$$

$$d_2 = 1.0876e-06 \mu\text{Hz}^{-2}$$

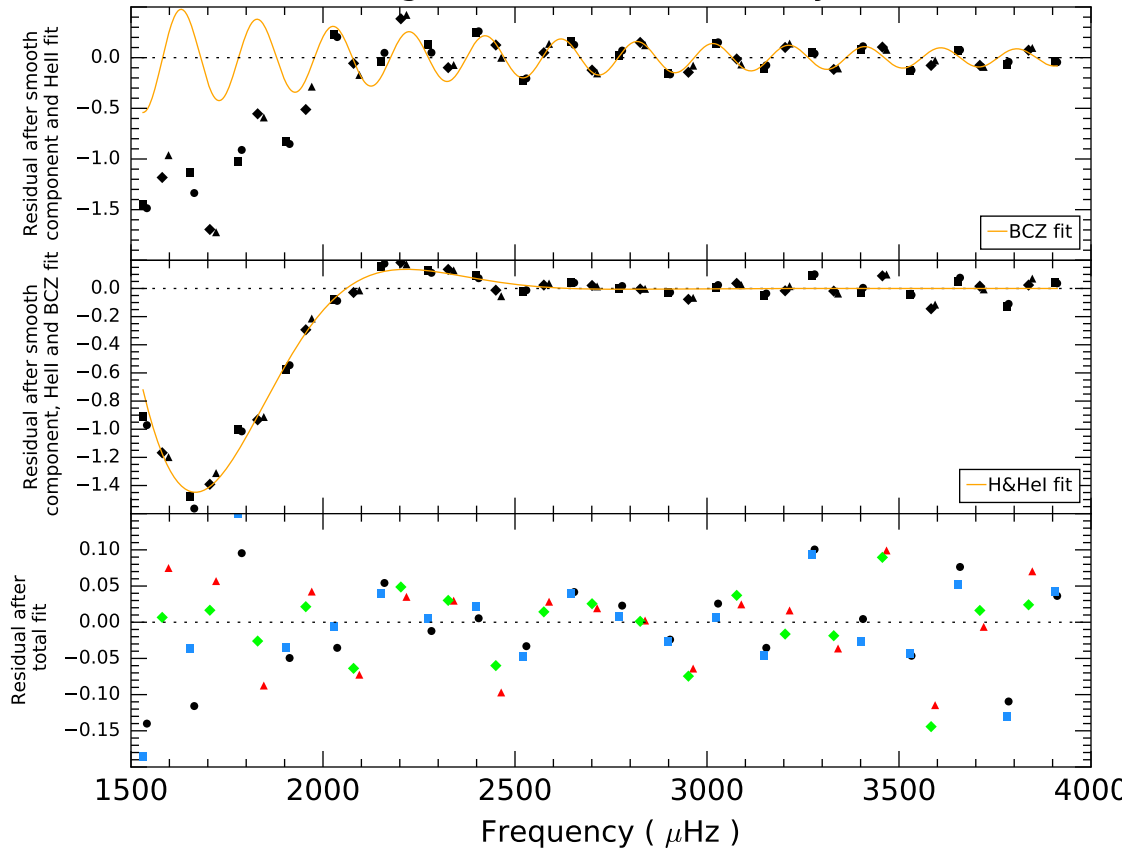
$$\tau_{\text{HI}} = 421.52 \text{ s}$$

$$\phi_{\text{HI}} = 1.3929$$

profile32

$$\chi^2_\nu(\text{dof} = 64) = 0.0049883$$

Age after ZAMS: 6.310 Gyr



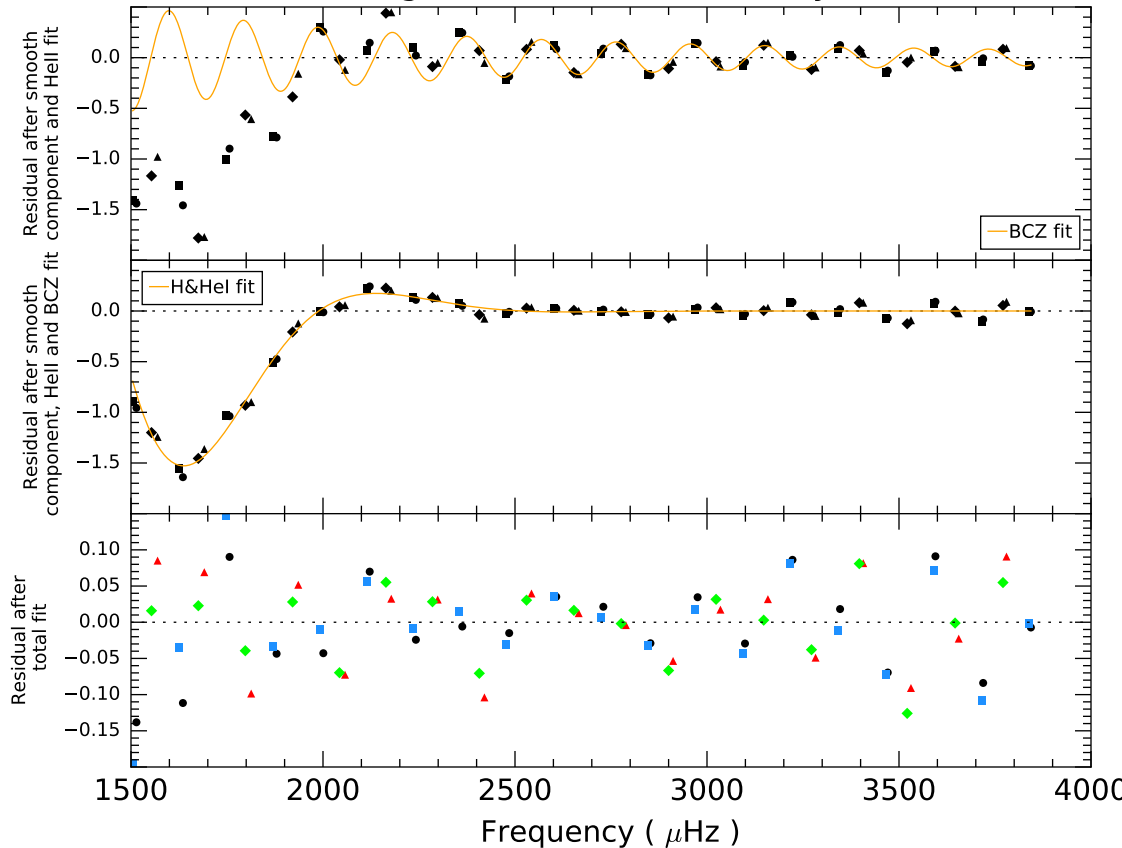
- $\ell = 0$
- $\ell = 1$
- $\ell = 2$
- $\ell = 3$

$$\begin{aligned}
 a_0 &= -1.7174 \mu \text{ Hz} \\
 a_1 &= 0.0014703 \\
 a_2 &= -2.6704e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0054428 \\
 c_2 &= 4.9388e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HeII}} &= 735.13 \text{ s} \\
 \phi_{\text{HeII}} &= 4.2925 \\
 b_2 &= 1.2698e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 2528.1 \text{ s} \\
 \phi_{\text{CZ}} &= 8.1534e-31 \\
 d_0 &= 0.027305 \\
 d_2 &= 1.1815e-06 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 430.43 \text{ s} \\
 \phi_{\text{HI}} &= 1.4206
 \end{aligned}$$

profile33

$$\chi^2_{\nu}(\text{dof} = 64) = 0.0048137$$

Age after ZAMS: 6.610 Gyr



$$a_0 = -1.7982 \mu \text{ Hz}$$

$$a_1 = 0.0015631$$

$$a_2 = -2.9009e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0060758$$

$$c_2 = 5.2905e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 750.37 \text{ s}$$

$$\phi_{\text{HeII}} = 4.3366$$

$$b_2 = 1.1868e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2578.4 \text{ s}$$

$$\phi_{\text{CZ}} = 3.48e-30$$

$$d_0 = 0.029243$$

$$d_2 = 1.2317e-06 \mu\text{Hz}^{-2}$$

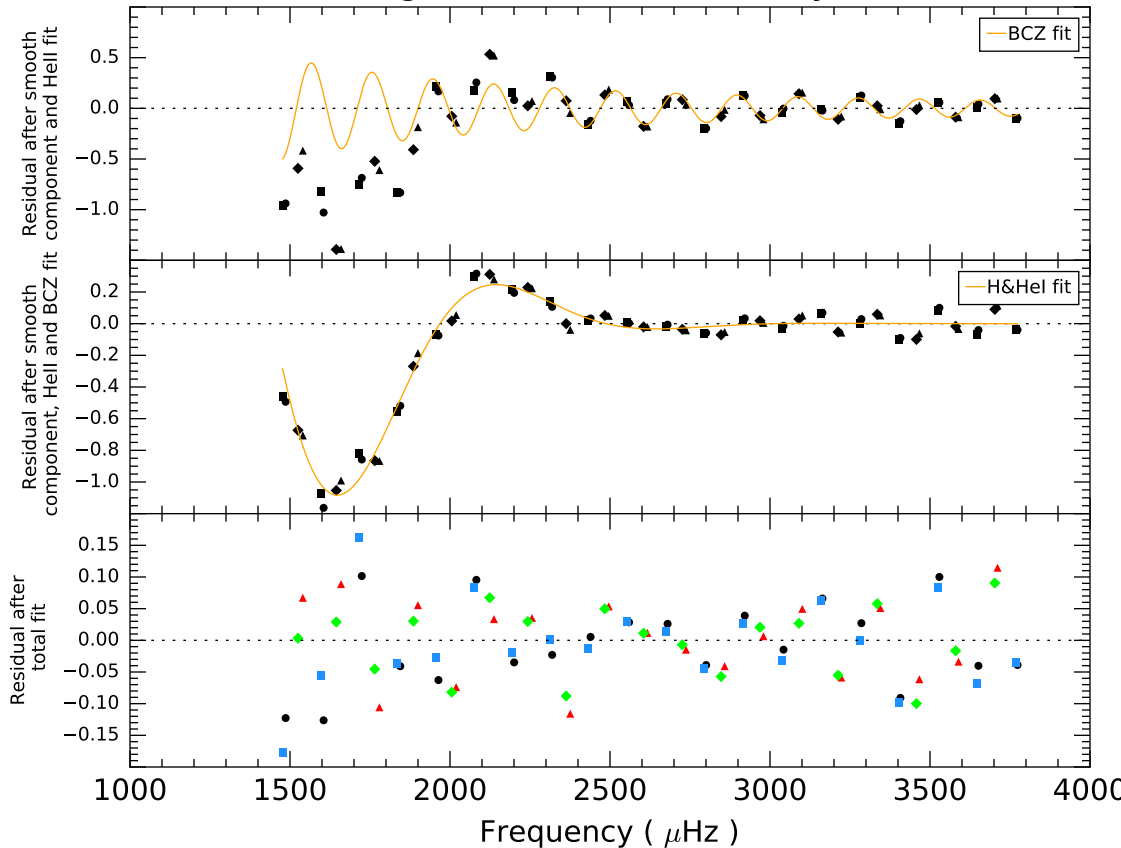
$$\tau_{\text{HI}} = 473.65 \text{ s}$$

$$\phi_{\text{HI}} = 0.7289$$

profile34

$$\chi^2_{\nu}(\text{dof} = 64) = 0.0047903$$

Age after ZAMS: 6.910 Gyr



$$a_0 = -2.3376 \mu \text{ Hz}$$

$$a_1 = 0.0019656$$

$$a_2 = -3.6523e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0056367$$

$$c_2 = 5.4929e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 781.83 \text{ s}$$

$$\phi_{\text{HeII}} = 3.928$$

$$b_2 = 1.0998e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2631.9 \text{ s}$$

$$\phi_{\text{CZ}} = 4.4897e-07$$

$$d_0 = 0.0079193$$

$$d_2 = 8.9151e-07 \mu\text{Hz}^{-2}$$

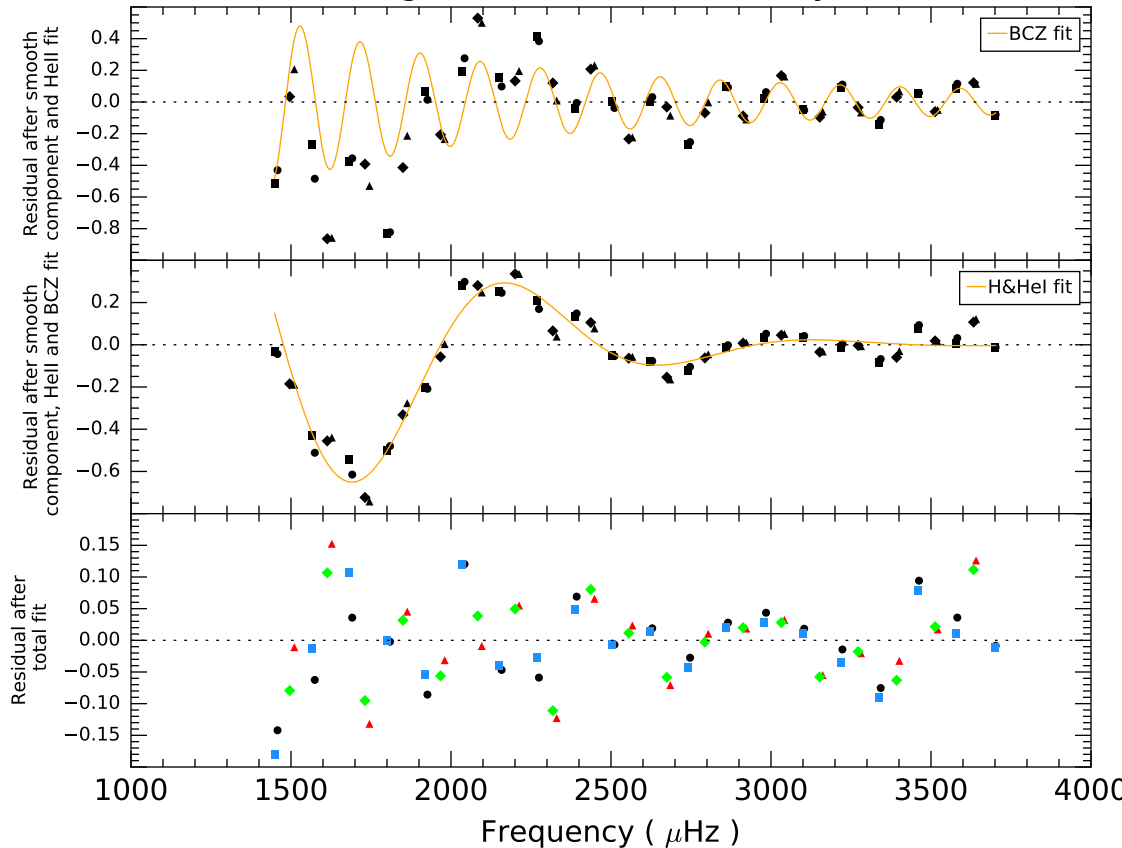
$$\tau_{\text{HI}} = 481.34 \text{ s}$$

$$\phi_{\text{HI}} = 0.66226$$

profile35

$$\chi^2_{\nu}(\text{dof} = 64) = 0.0050908$$

Age after ZAMS: 7.210 Gyr



$$a_0 = -3.0822 \mu \text{ Hz}$$

$$a_1 = 0.002559$$

$$a_2 = -4.809e-07 \mu \text{ Hz}^{-1}$$

$$c_0 = 0.0047219$$

$$c_2 = 5.6606e-07 \mu \text{ Hz}^{-2}$$

$$\tau_{\text{HeII}} = 830.82 \text{ s}$$

$$\phi_{\text{HeII}} = 3.1898$$

$$b_2 = 1.1223e+06 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2667.2 \text{ s}$$

$$\phi_{\text{CZ}} = 0.57942$$

$$d_0 = 0.0019178$$

$$d_2 = 5.5494e-07 \mu \text{ Hz}^{-2}$$

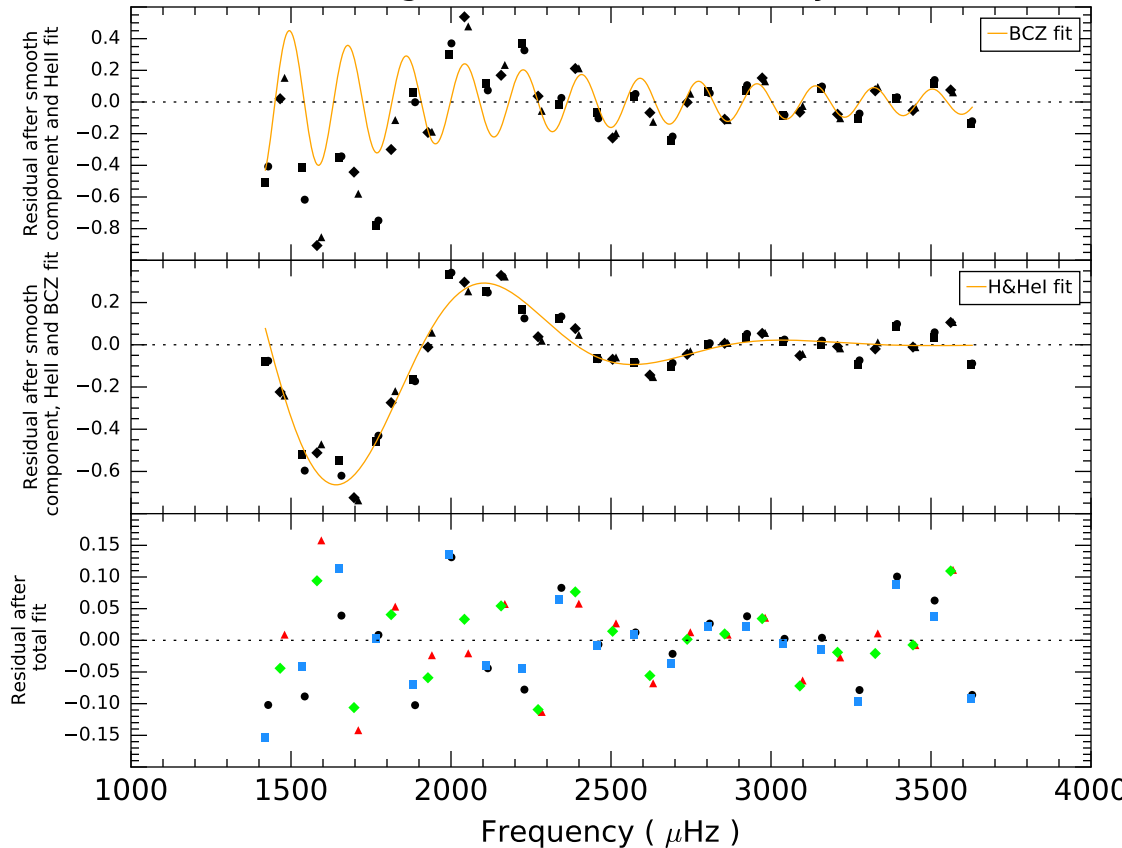
$$\tau_{\text{HI}} = 508.28 \text{ s}$$

$$\phi_{\text{HI}} = 6.2815$$

profile36

$$\chi^2_{\nu}(\text{dof} = 64) = 0.005246$$

Age after ZAMS: 7.510 Gyr



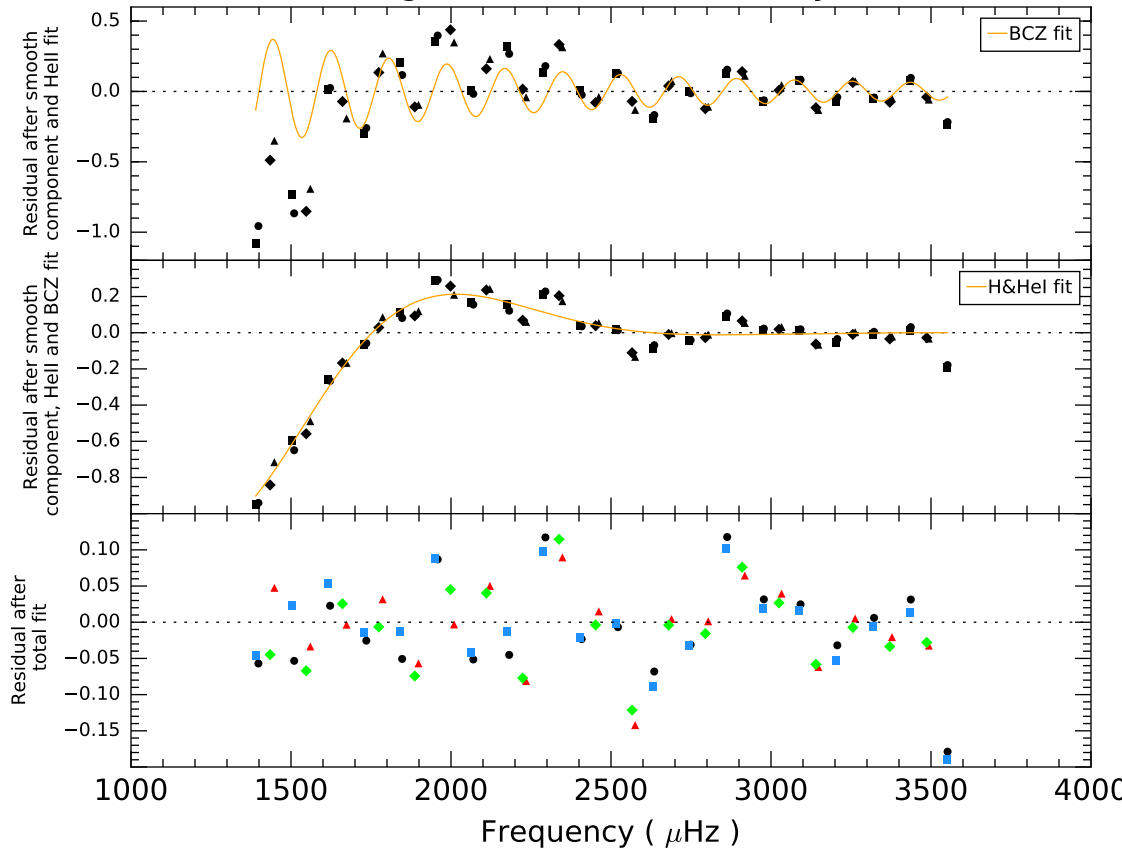
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -3.0084 \mu \text{ Hz} \\
 a_1 &= 0.0025767 \\
 a_2 &= -4.9852e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0048447 \\
 c_2 &= 5.9307e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HeII}} &= 848.17 \text{ s} \\
 \phi_{\text{HeII}} &= 3.306 \\
 b_2 &= 1.0076e+06 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 2737.8 \text{ s} \\
 \phi_{\text{CZ}} &= 0.37481 \\
 d_0 &= 0.0020852 \\
 d_2 &= 6.0131e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 523.32 \text{ s} \\
 \phi_{\text{HI}} &= 6.2824
 \end{aligned}$$

profile37

$$\chi^2_\nu(\text{dof} = 64) = 0.0055655$$

Age after ZAMS: 7.810 Gyr



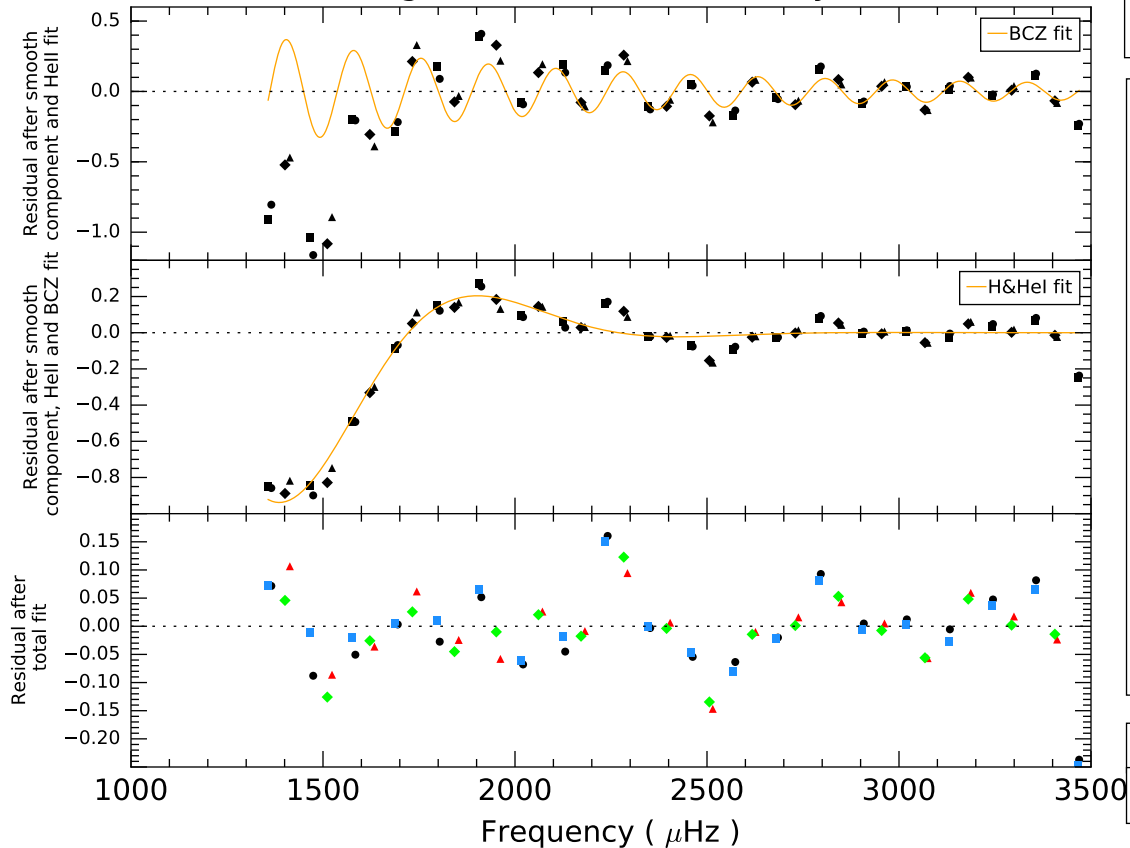
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -2.9614 \mu \text{ Hz} \\
 a_1 &= 0.0025155 \\
 a_2 &= -4.8853e-07 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.004313 \\
 c_2 &= 5.5976e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{He II}} &= 845.75 \text{ s} \\
 \phi_{\text{He II}} &= 4.1313 \\
 b_2 &= 7.7174e+05 \text{ mHz}^3 \\
 \tau_{\text{CZ}} &= 2762.1 \text{ s} \\
 \phi_{\text{CZ}} &= 1.6925 \\
 d_0 &= 0.0029678 \\
 d_2 &= 7.6877e-07 \mu \text{ Hz}^{-2} \\
 \tau_{\text{HI}} &= 285.95 \text{ s} \\
 \phi_{\text{HI}} &= 6.2656
 \end{aligned}$$

profile38

$$\chi^2_\nu(\text{dof} = 64) = 0.0046004$$

Age after ZAMS: 8.110 Gyr



$$a_0 = -2.9 \mu\text{Hz}$$

$$a_1 = 0.0026509$$

$$a_2 = -5.4669e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0055032$$

$$c_2 = 6.3748e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 880.26 \text{ s}$$

$$\phi_{\text{HeII}} = 3.9145$$

$$b_2 = 7.2791e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2851.3 \text{ s}$$

$$\phi_{\text{CZ}} = 1.4799$$

$$d_0 = 0.0052731$$

$$d_2 = 1.0344e-06 \mu\text{Hz}^{-2}$$

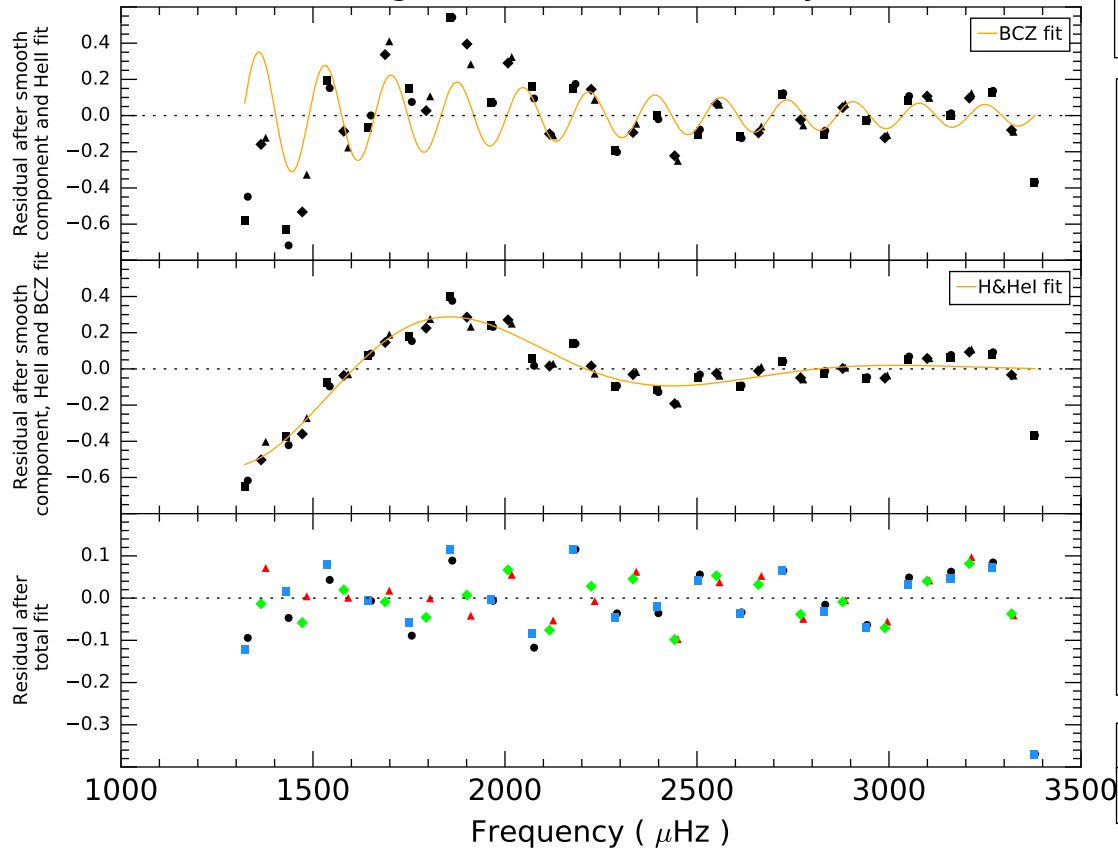
$$\tau_{\text{HI}} = 456.85 \text{ s}$$

$$\phi_{\text{HI}} = 2.6803$$

profile39

$$\chi^2_{\nu}(\text{dof} = 64) = 0.0060273$$

Age after ZAMS: 8.410 Gyr



$$a_0 = -4.4652 \mu \text{ Hz}$$

$$a_1 = 0.0039838$$

$$a_2 = -8.2516e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0052413$$

$$c_2 = 6.8459e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 897.32 \text{ s}$$

$$\phi_{\text{HeII}} = 4.209$$

$$b_2 = 6.4956e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 2909.0 \text{ s}$$

$$\phi_{\text{CZ}} = 2.1193$$

$$d_0 = 0.0010312$$

$$d_2 = 5.3943e-07 \mu\text{Hz}^{-2}$$

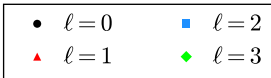
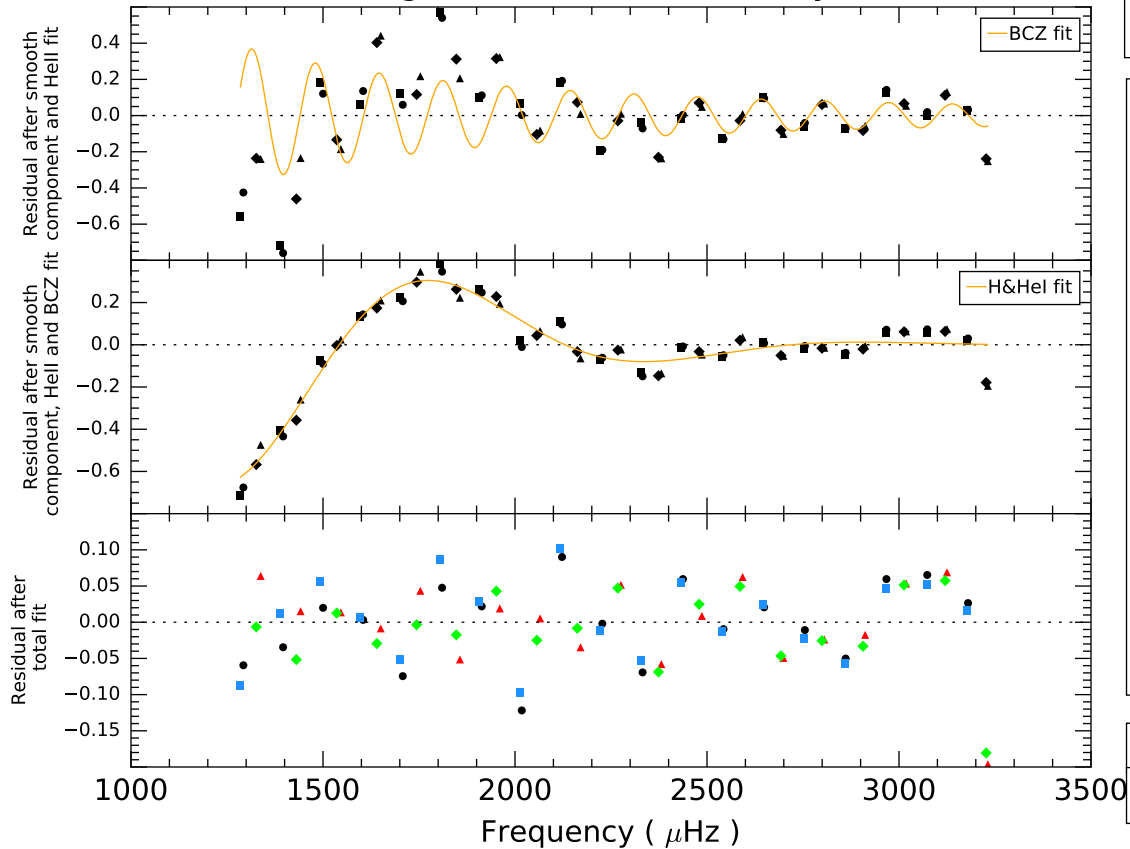
$$\tau_{\text{HI}} = 413.51 \text{ s}$$

$$\phi_{\text{HI}} = 4.2233$$

profile40

$$\chi^2_{\nu}(\text{dof} = 64) = 0.0084001$$

Age after ZAMS: 8.708 Gyr



$$\begin{aligned} a_0 &= -4.2451 \mu \text{ Hz} \\ a_1 &= 0.0039381 \\ a_2 &= -8.4711e-07 \mu \text{ Hz}^{-2} \end{aligned}$$

$$\begin{aligned} c_0 &= 0.0057324 \\ c_2 &= 7.4875e-07 \mu \text{ Hz}^{-2} \\ \tau_{\text{HeII}} &= 927.21 \text{ s} \\ \phi_{\text{HeII}} &= 4.2988 \end{aligned}$$

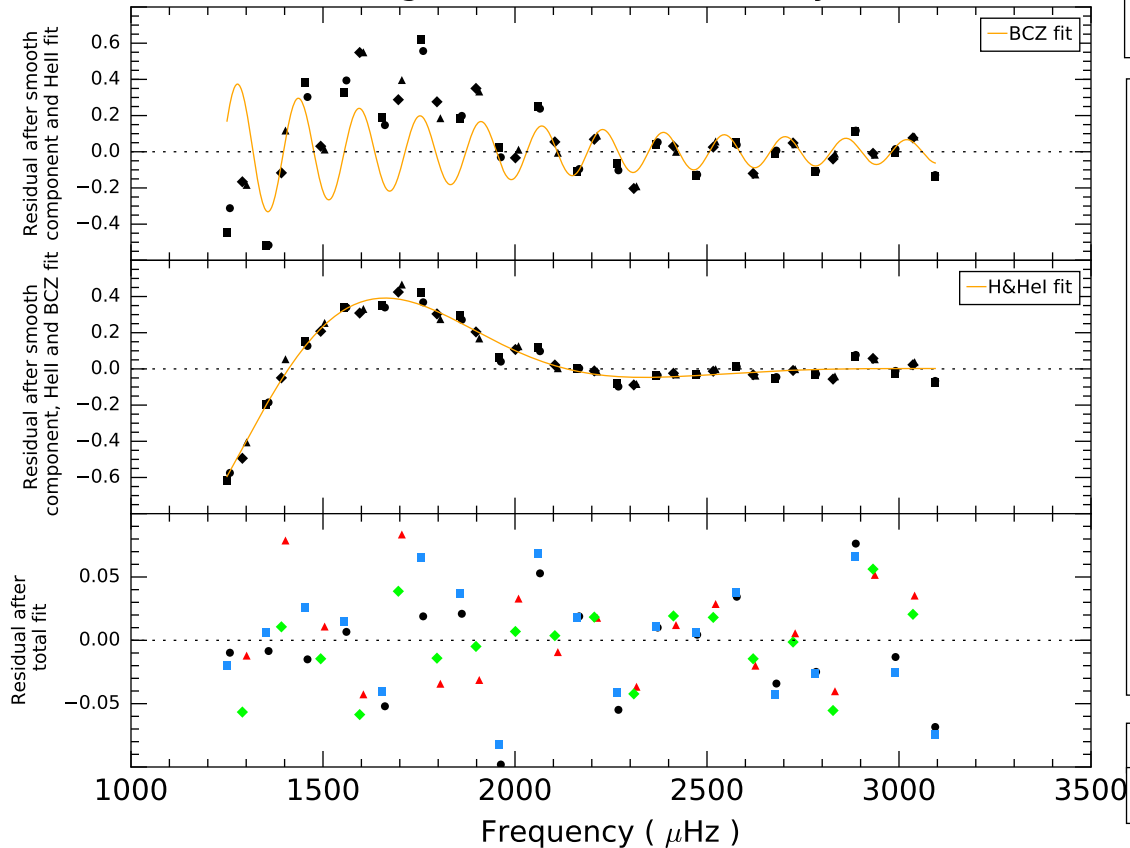
$$\begin{aligned} b_2 &= 6.3685e+05 \text{ mHz}^3 \\ \tau_{\text{CZ}} &= 3015.2 \text{ s} \\ \phi_{\text{CZ}} &= 2.004 \end{aligned}$$

$$\begin{aligned} d_0 &= 0.0015104 \\ d_2 &= 6.7272e-07 \mu \text{ Hz}^{-2} \\ \tau_{\text{HI}} &= 425.24 \text{ s} \\ \phi_{\text{HI}} &= 4.3263 \end{aligned}$$

profile41

$$\chi^2_{\nu}(\text{dof} = 62) = 0.0039193$$

Age after ZAMS: 8.972 Gyr



$$a_0 = -4.6013 \mu\text{Hz}$$

$$a_1 = 0.0042783$$

$$a_2 = -9.3266e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0056289$$

$$c_2 = 7.7534e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 947.78 \text{ s}$$

$$\phi_{\text{HeII}} = 4.6087$$

$$b_2 = 6.108e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3156.6 \text{ s}$$

$$\phi_{\text{CZ}} = 1.1312$$

$$d_0 = 0.0028393$$

$$d_2 = 8.5795e-07 \mu\text{Hz}^{-2}$$

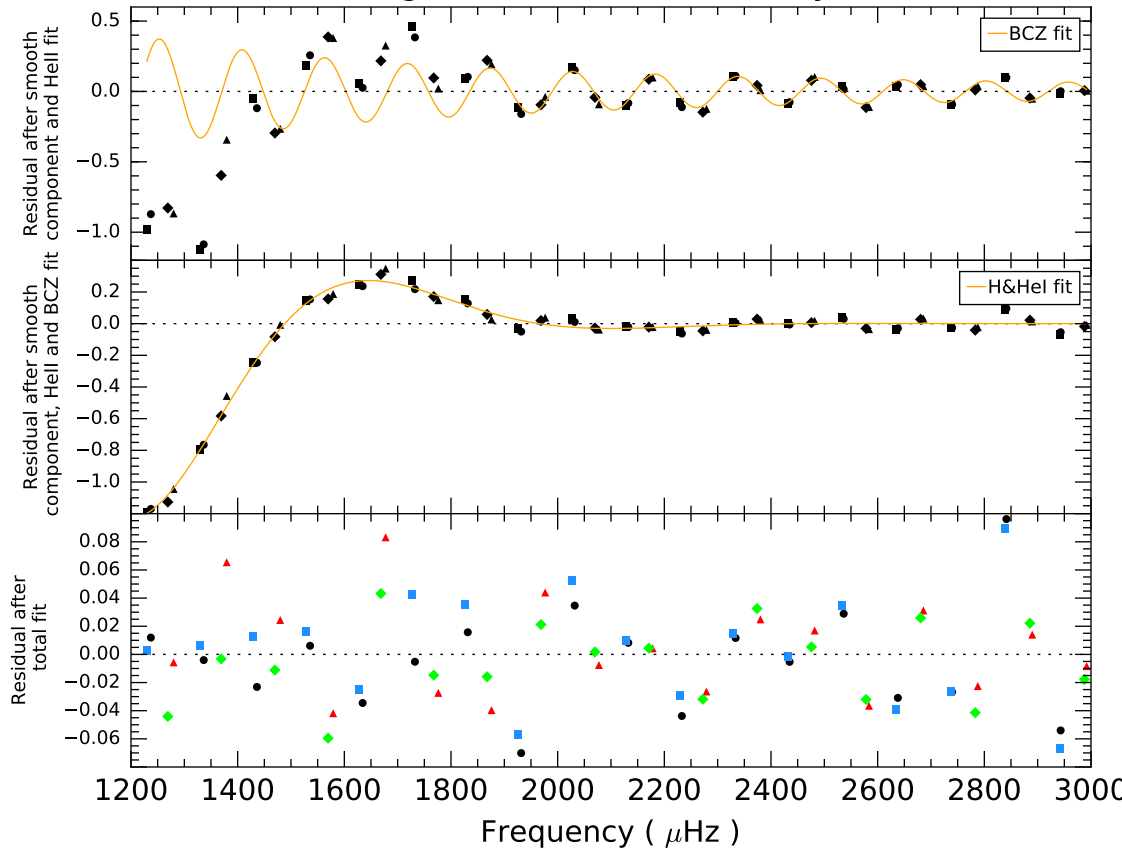
$$\tau_{\text{HI}} = 345.1 \text{ s}$$

$$\phi_{\text{HI}} = 0.16776$$

profile42

$$\chi^2_{\nu}(\text{dof} = 60) = 0.0019306$$

Age after ZAMS: 9.117 Gyr



$$a_0 = -2.5795 \mu \text{ Hz}$$

$$a_1 = 0.0027203$$

$$a_2 = -6.4184e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0071884$$

$$c_2 = 8.7293e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 965.21 \text{ s}$$

$$\phi_{\text{HeII}} = 4.6219$$

$$b_2 = 5.8609e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3227.2 \text{ s}$$

$$\phi_{\text{CZ}} = 0.98309$$

$$d_0 = 0.0077406$$

$$d_2 = 1.3646e-06 \mu\text{Hz}^{-2}$$

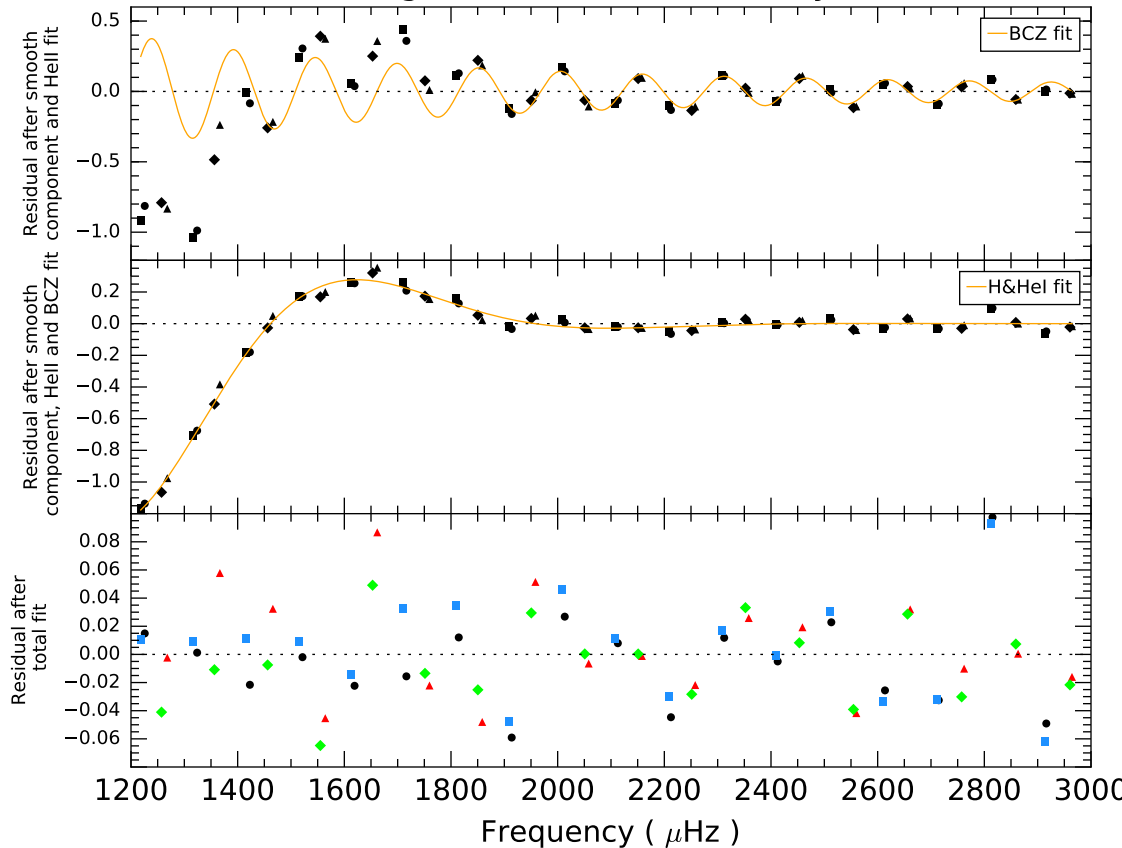
$$\tau_{\text{HI}} = 524.21 \text{ s}$$

$$\phi_{\text{HI}} = 2.7635$$

profile43

$$\chi^2_\nu(\text{dof} = 58) = 0.0015476$$

Age after ZAMS: 9.197 Gyr



$$a_0 = -2.7131 \mu \text{ Hz}$$

$$a_1 = 0.0028641$$

$$a_2 = -6.8034e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0071431$$

$$c_2 = 8.8886e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 976.58 \text{ s}$$

$$\phi_{HeII} = 4.6436$$

$$b_2 = 5.7648e+05 \text{ mHz}^3$$

$$\tau_{CZ} = 3262.1 \text{ s}$$

$$\phi_{CZ} = 1.0177$$

$$d_0 = 0.0073715$$

$$d_2 = 1.369e-06 \mu\text{Hz}^{-2}$$

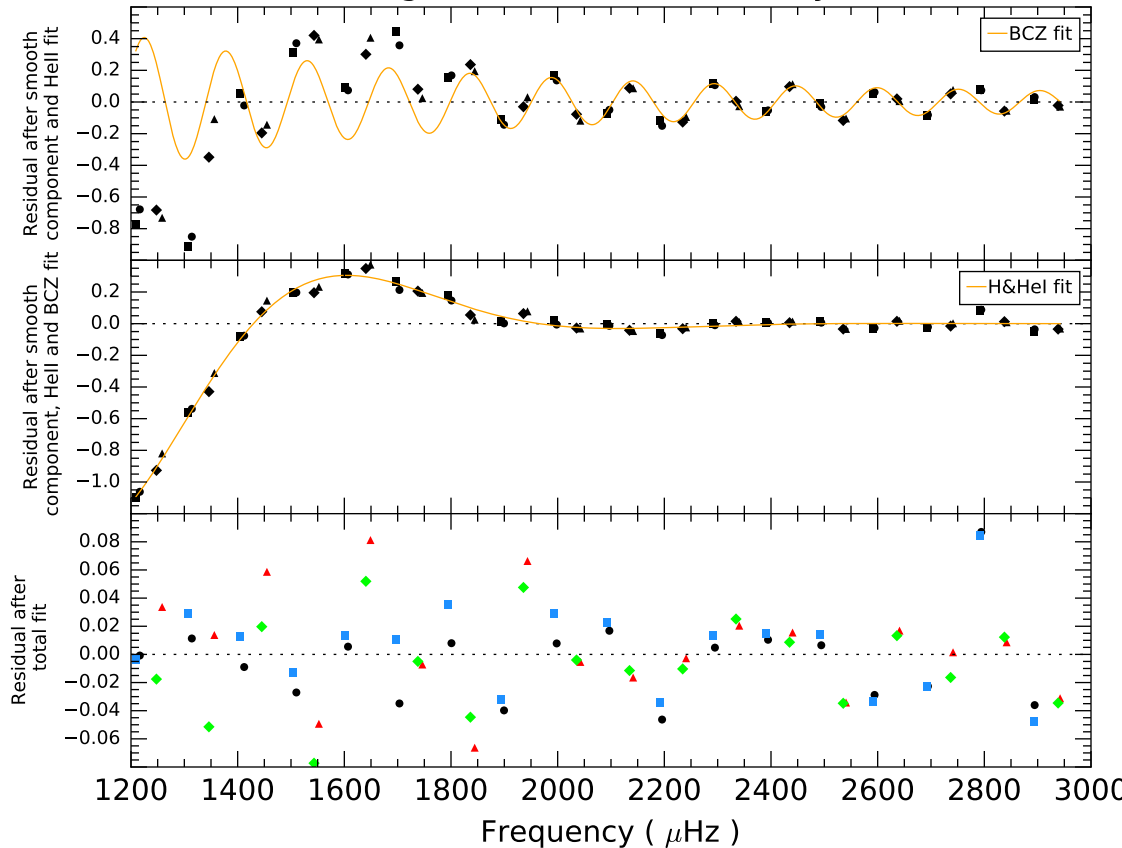
$$\tau_{HI} = 504.12 \text{ s}$$

$$\phi_{HI} = 3.3086$$

profile44

$$\chi^2_\nu(\text{dof} = 58) = 0.0014873$$

Age after ZAMS: 9.260 Gyr



$$a_0 = -3.1079 \mu \text{ Hz}$$

$$a_1 = 0.003225$$

$$a_2 = -7.6304e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0070913$$

$$c_2 = 9.0307e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 988.13 \text{ s}$$

$$\phi_{HeII} = 4.6185$$

$$b_2 = 6.1175e+05 \text{ mHz}^3$$

$$\tau_{CZ} = 3276.3 \text{ s}$$

$$\phi_{CZ} = 1.3683$$

$$d_0 = 0.0062666$$

$$d_2 = 1.2968e-06 \mu\text{Hz}^{-2}$$

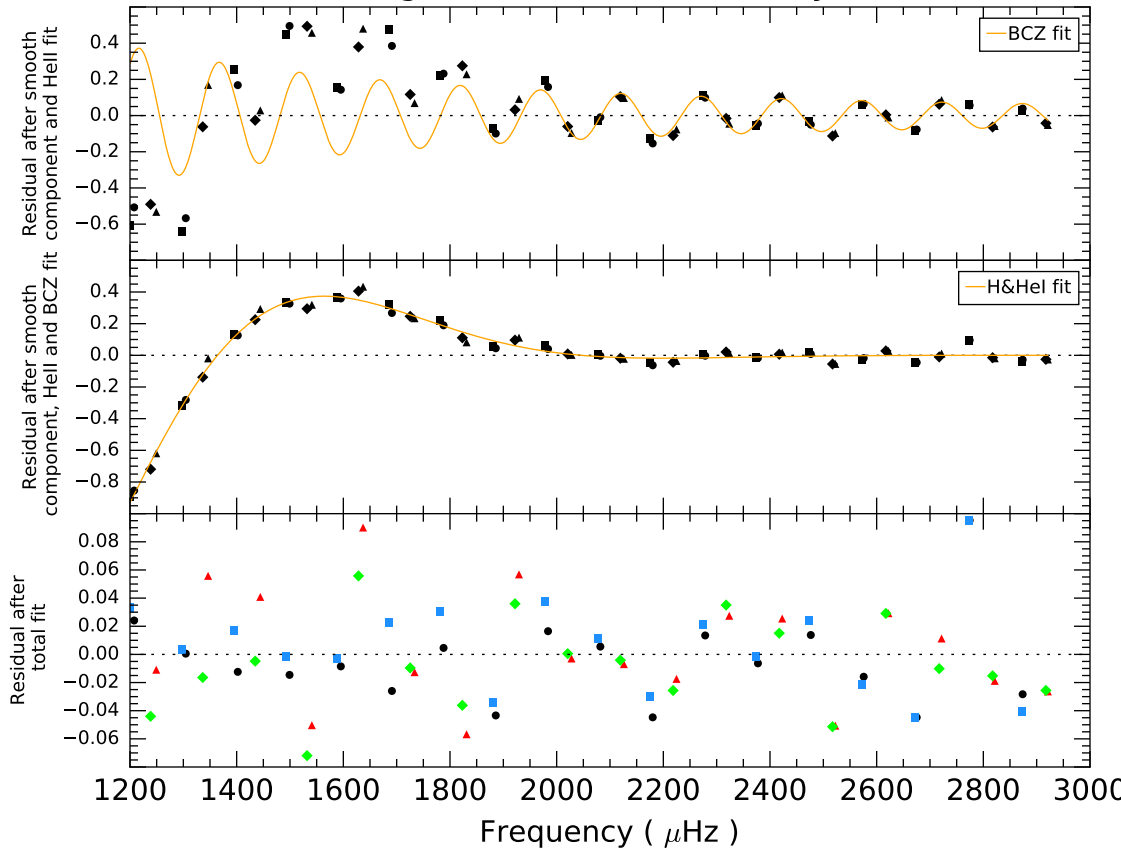
$$\tau_{HI} = 466.66 \text{ s}$$

$$\phi_{HI} = 4.1836$$

profile45

$$\chi^2_\nu(\text{dof} = 58) = 0.0013962$$

Age after ZAMS: 9.319 Gyr



$$a_0 = -3.7682 \mu\text{Hz}$$

$$a_1 = 0.0037754$$

$$a_2 = -8.7911e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0067539$$

$$c_2 = 8.9883e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 991.92 \text{ s}$$

$$\phi_{\text{HeII}} = 4.7647$$

$$b_2 = 5.5146e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3321.4 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0185$$

$$d_0 = 0.0075547$$

$$d_2 = 1.3188e-06 \mu\text{Hz}^{-2}$$

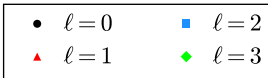
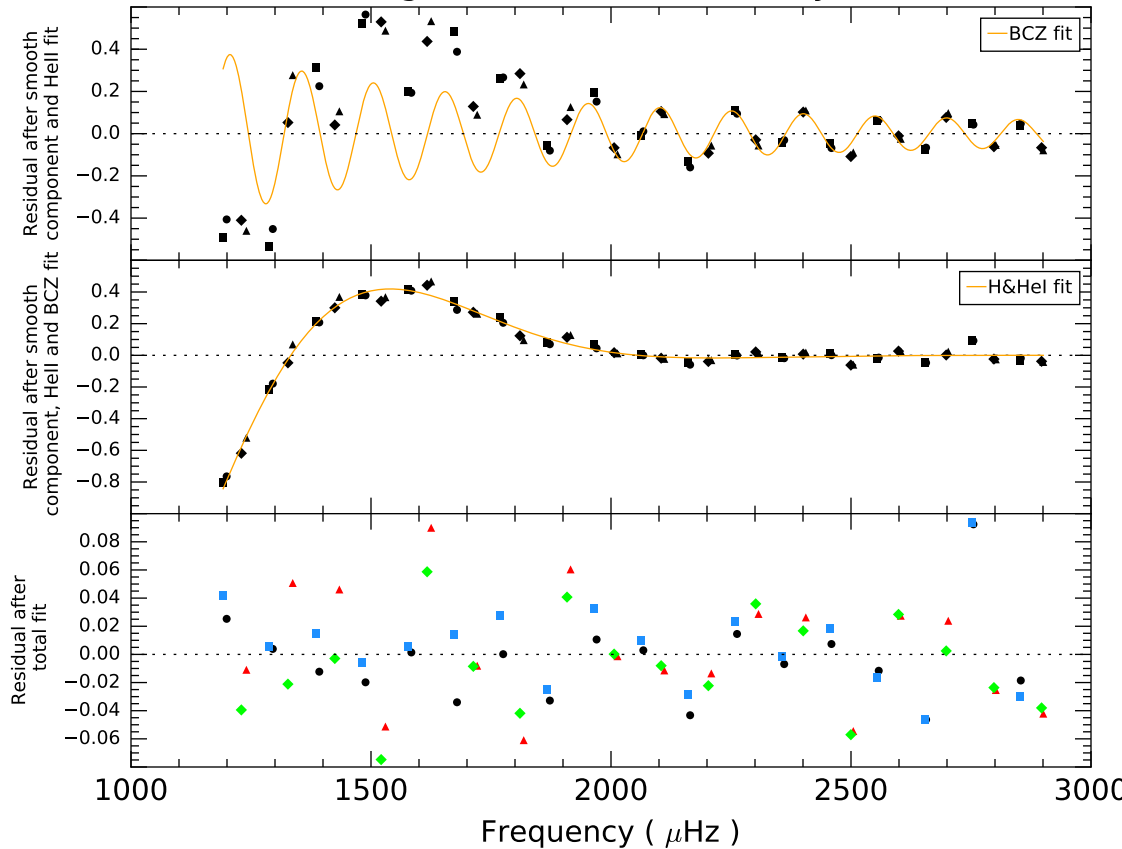
$$\tau_{\text{HI}} = 366.57 \text{ s}$$

$$\phi_{\text{HI}} = 1.637e-05$$

profile46

$$\chi^2_{\nu}(\text{dof} = 58) = 0.0015063$$

Age after ZAMS: 9.376 Gyr



$$a_0 = -4.0982 \mu \text{ Hz}$$

$$a_1 = 0.0040789$$

$$a_2 = -9.4981e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0068305$$

$$c_2 = 9.1608e-07 \mu\text{Hz}^{-2}$$

$$\tau_{HeII} = 1001.1 \text{ s}$$

$$\phi_{HeII} = 4.7708$$

$$b_2 = 5.4546e+05 \text{ mHz}^3$$

$$\tau_{CZ} = 3350.1 \text{ s}$$

$$\phi_{CZ} = 1.0165$$

$$d_0 = 0.0081343$$

$$d_2 = 1.3294e-06 \mu\text{Hz}^{-2}$$

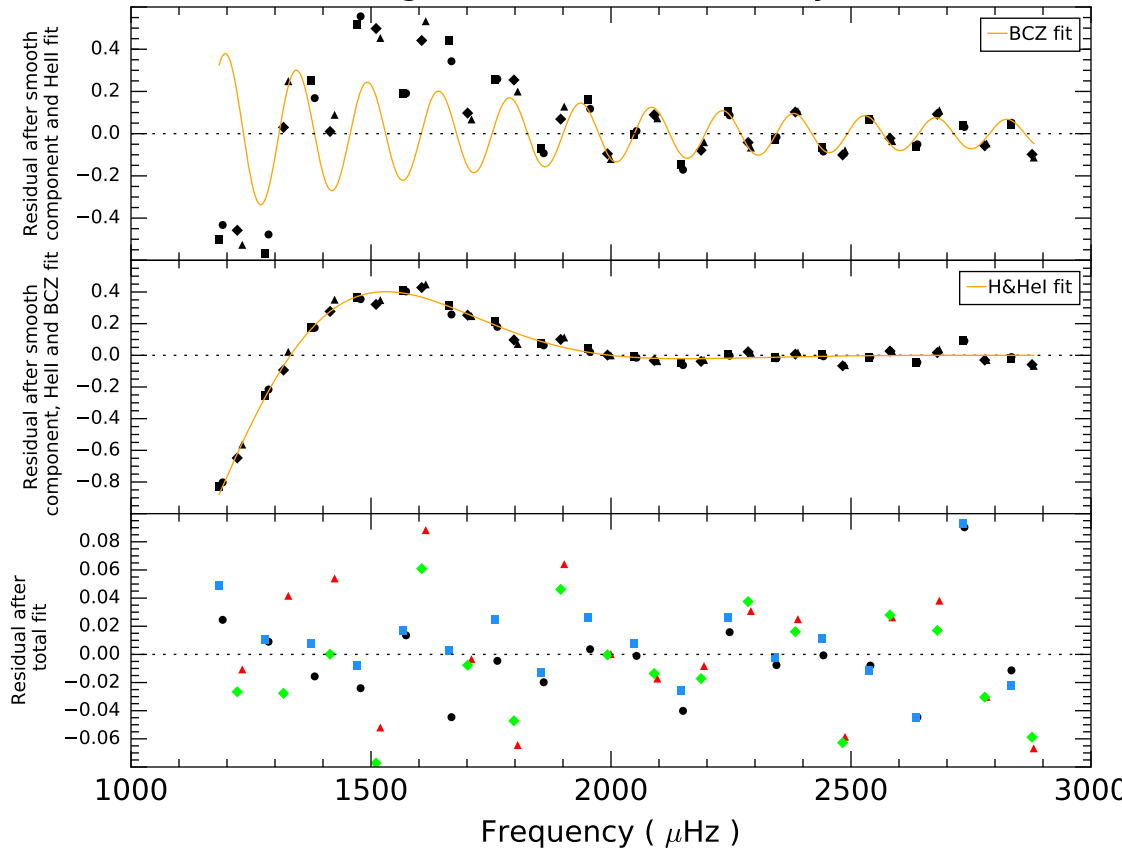
$$\tau_{HI} = 345.67 \text{ s}$$

$$\phi_{HI} = 0.49388$$

profile47

$$\chi^2_{\nu}(\text{dof} = 58) = 0.0015488$$

Age after ZAMS: 9.430 Gyr



$$a_0 = -3.9791 \mu \text{ Hz}$$

$$a_1 = 0.0040349$$

$$a_2 = -9.5397e-07 \mu\text{Hz}^{-1}$$

$$c_0 = 0.0070637$$

$$c_2 = 9.4197e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 1012.2 \text{ s}$$

$$\phi_{\text{HeII}} = 4.7276$$

$$b_2 = 5.4393e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3378.8 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0002$$

$$d_0 = 0.007511$$

$$d_2 = 1.3388e-06 \mu\text{Hz}^{-2}$$

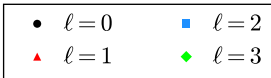
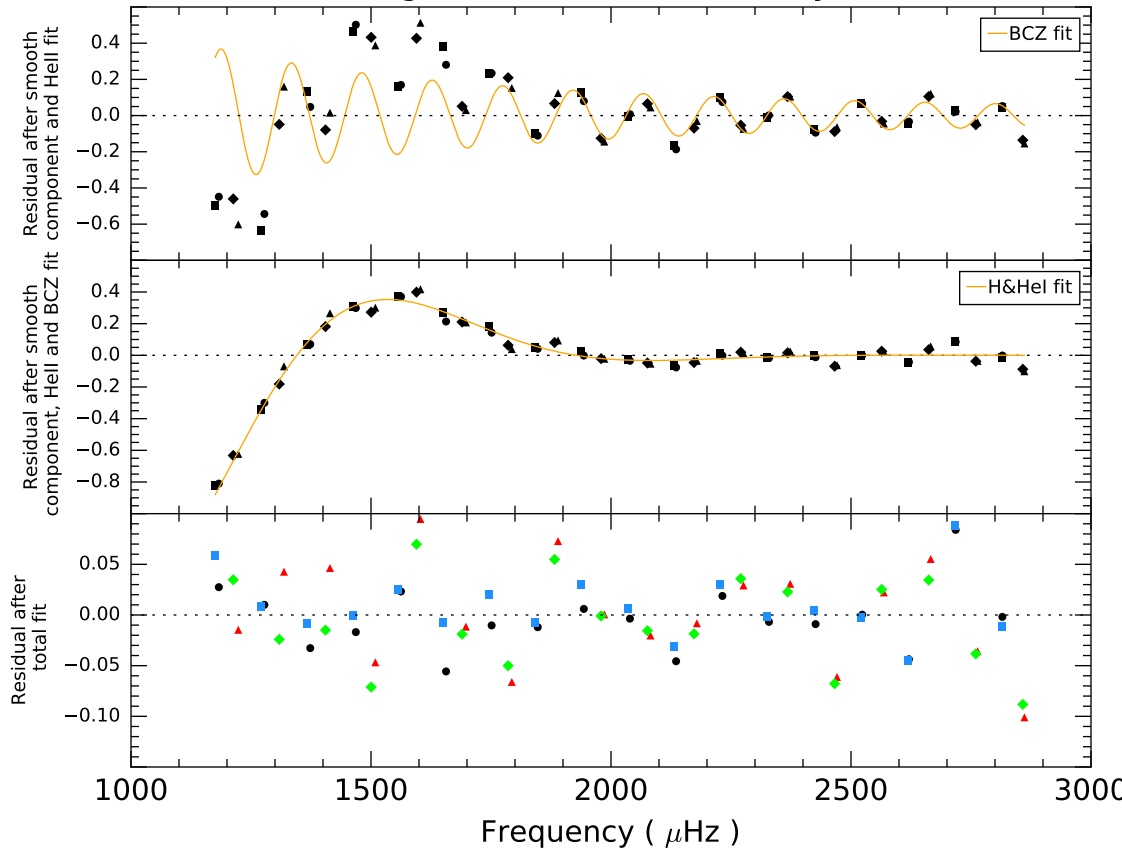
$$\tau_{\text{HI}} = 375.34 \text{ s}$$

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

profile48

$$\chi^2_{\nu}(\text{dof} = 58) = 0.0016744$$

Age after ZAMS: 9.483 Gyr



$$\begin{aligned} a_0 &= -3.6778 \mu\text{Hz} \\ a_1 &= 0.0038429 \\ a_2 &= -9.2858e-07 \mu\text{Hz}^{-2} \end{aligned}$$

$$\begin{aligned} c_0 &= 0.0070253 \\ c_2 &= 9.5475e-07 \mu\text{Hz}^{-2} \\ \tau_{\text{HeII}} &= 1026.6 \text{ s} \\ \phi_{\text{HeII}} &= 4.6109 \end{aligned}$$

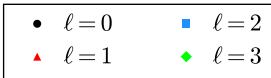
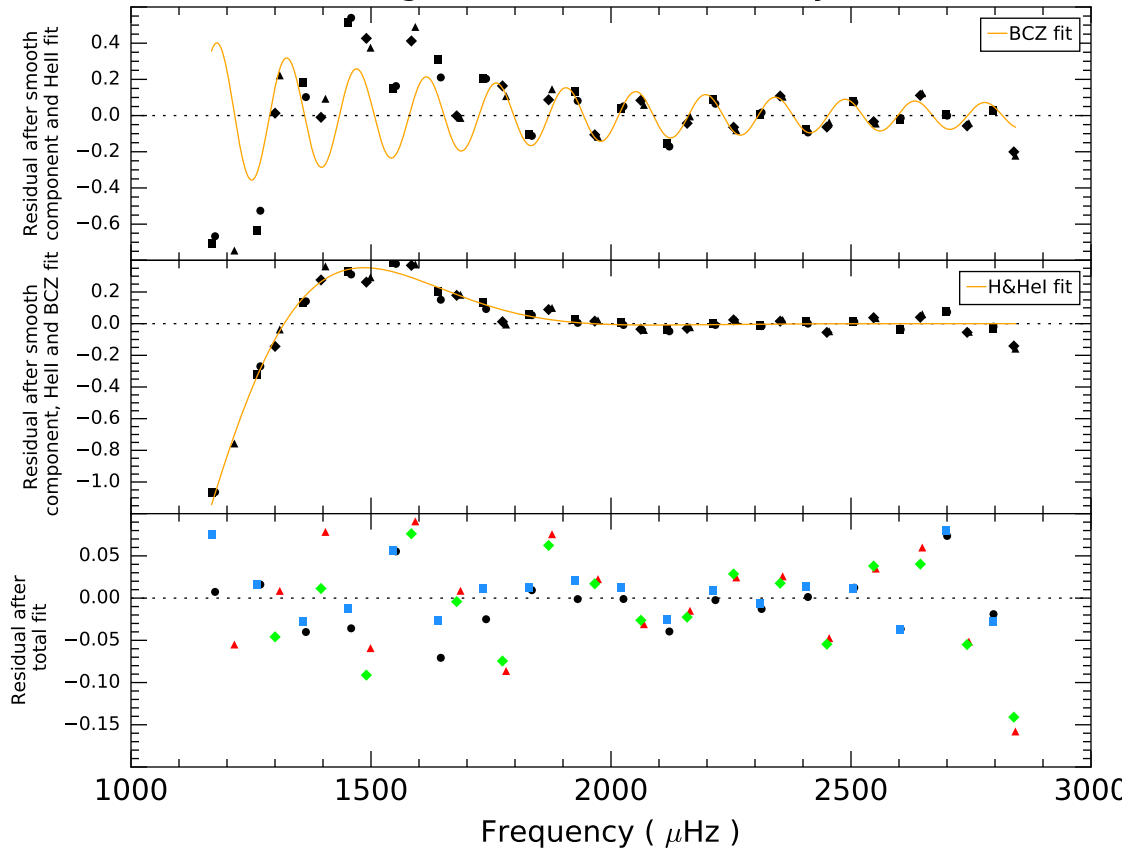
$$\begin{aligned} b_2 &= 5.1919e+05 \text{ mHz}^3 \\ \tau_{\text{CZ}} &= 3409.9 \text{ s} \\ \phi_{\text{CZ}} &= 0.91871 \end{aligned}$$

$$\begin{aligned} d_0 &= 0.0055728 \\ d_2 &= 1.2861e-06 \mu\text{Hz}^{-2} \\ \tau_{\text{HI}} &= 429.87 \text{ s} \\ \phi_{\text{HI}} &= 5.2994 \end{aligned}$$

profile49

$$\chi^2_{\nu}(\text{dof} = 58) = 0.002021$$

Age after ZAMS: 9.533 Gyr



$$\begin{aligned} a_0 &= -3.3369 \mu\text{Hz} \\ a_1 &= 0.0035575 \\ a_2 &= -8.7289e-07 \mu\text{Hz}^{-2} \end{aligned}$$

$$\begin{aligned} c_0 &= 0.0073361 \\ c_2 &= 9.6743e-07 \mu\text{Hz}^{-2} \\ \tau_{\text{HeII}} &= 1021.9 \text{ s} \\ \phi_{\text{HeII}} &= 4.8982 \end{aligned}$$

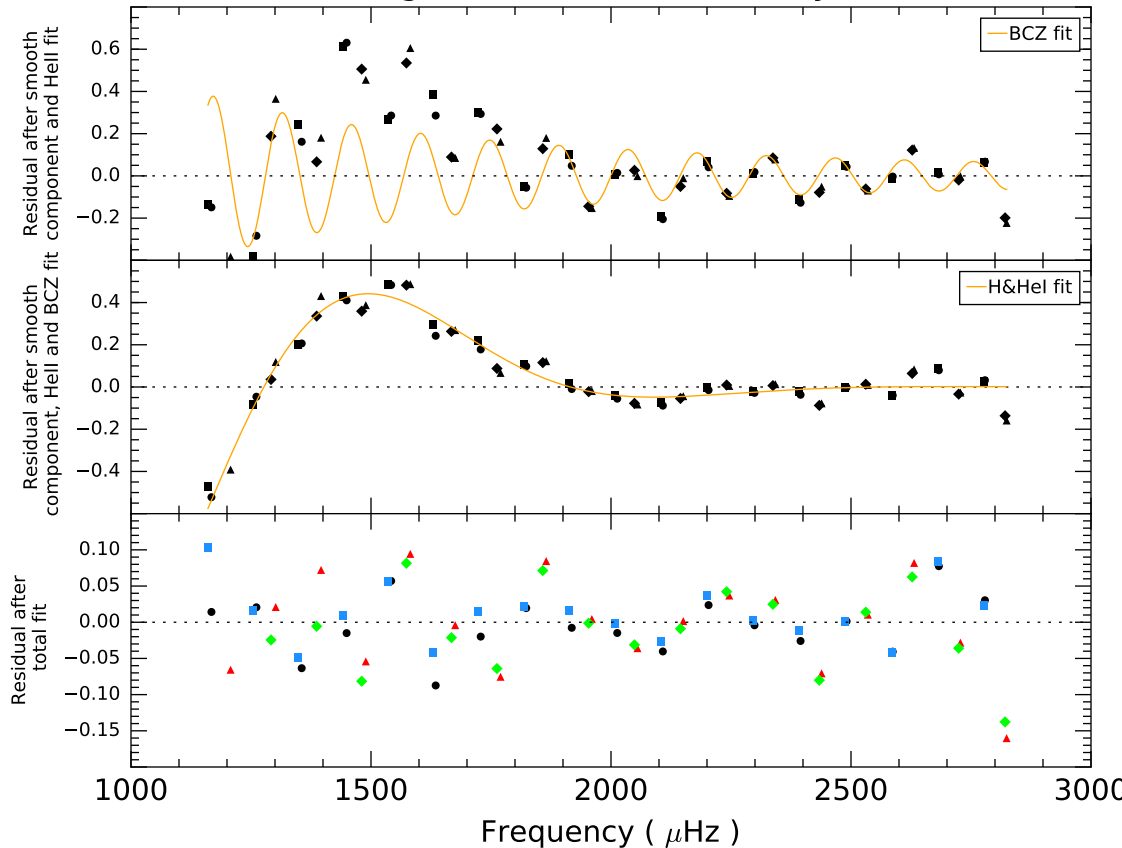
$$\begin{aligned} b_2 &= 5.5896e+05 \text{ mHz}^3 \\ \tau_{\text{CZ}} &= 3439.1 \text{ s} \\ \phi_{\text{CZ}} &= 0.8547 \end{aligned}$$

$$\begin{aligned} d_0 &= 0.016164 \\ d_2 &= 1.768e-06 \mu\text{Hz}^{-2} \\ \tau_{\text{HI}} &= 390.08 \text{ s} \\ \phi_{\text{HI}} &= 6.1007 \end{aligned}$$

profile50

$$\chi^2_\nu(\text{dof} = 57) = 0.0030063$$

Age after ZAMS: 9.581 Gyr



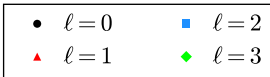
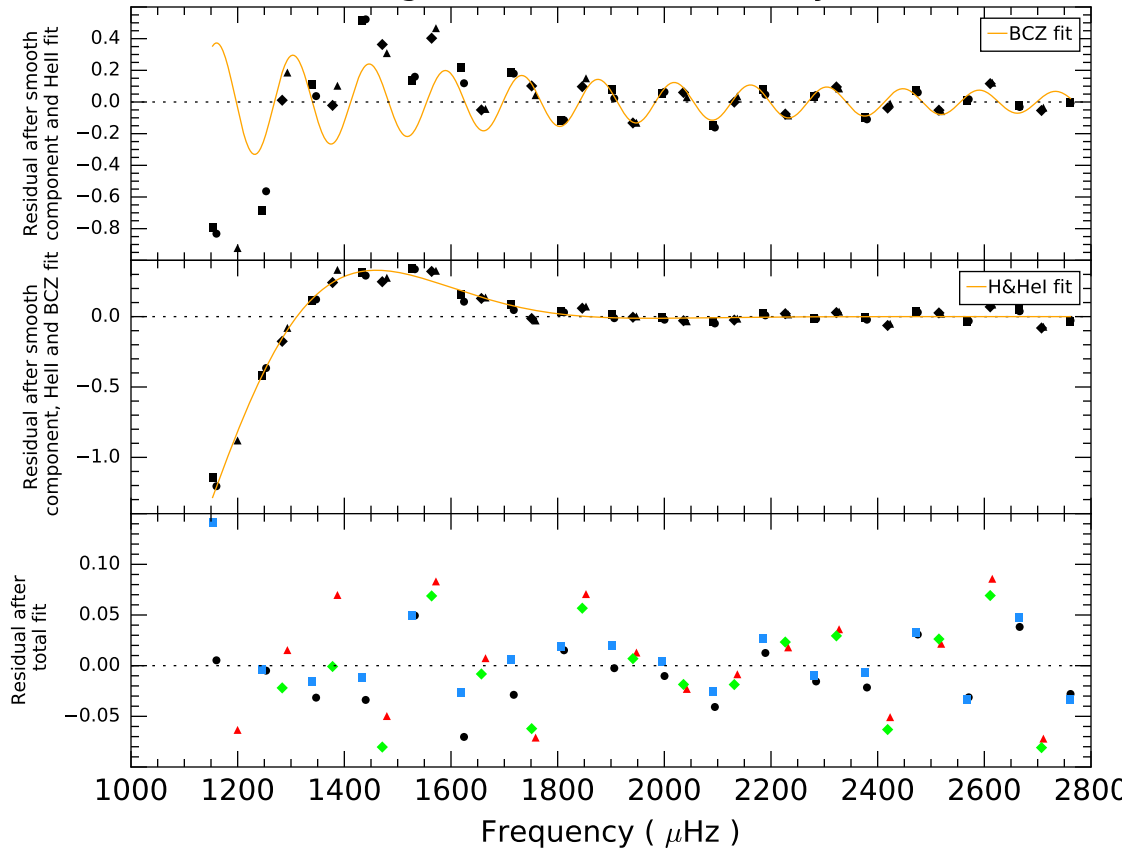
- \bullet $\ell = 0$
- \blacktriangle $\ell = 1$
- \blacksquare $\ell = 2$
- \blacklozenge $\ell = 3$

$$\begin{aligned}
 a_0 &= -4.6797 \mu \text{ Hz} \\
 a_1 &= 0.004803 \\
 a_2 &= -1.1569e-06 \mu \text{ Hz}^{-2} \\
 c_0 &= 0.0069714 \\
 c_2 &= 9.8002e-07 \mu \text{ Hz}^{-2} \\
 \tau_{HeII} &= 1051.8 \text{ s} \\
 \phi_{HeII} &= 4.4799 \\
 b_2 &= 5.1834e+05 \text{ mHz}^3 \\
 \tau_{CZ} &= 3473.0 \text{ s} \\
 \phi_{CZ} &= 0.68527 \\
 d_0 &= 0.0041621 \\
 d_2 &= 1.1257e-06 \mu \text{ Hz}^{-2} \\
 \tau_{HI} &= 391.64 \text{ s} \\
 \phi_{HI} &= 6.2827
 \end{aligned}$$

profile51

$$\chi^2_\nu(\text{dof} = 57) = 0.0033942$$

Age after ZAMS: 9.627 Gyr

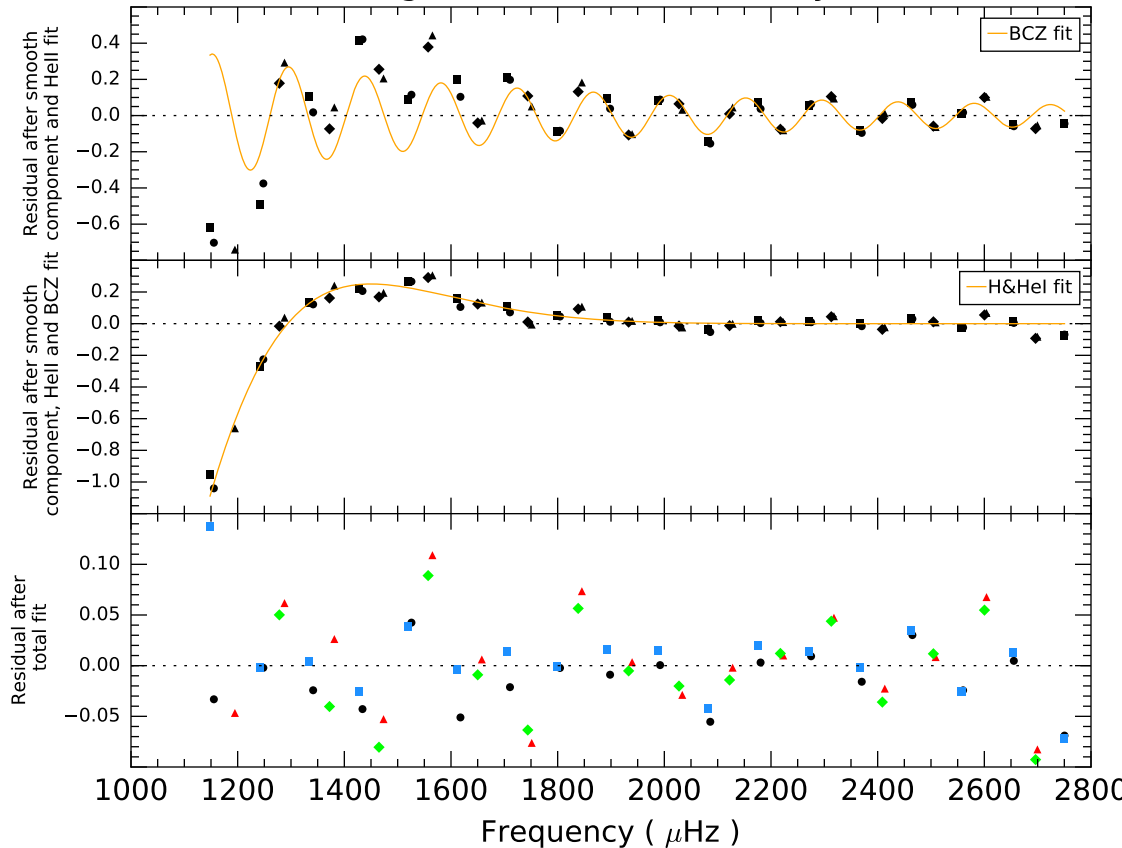


$a_0 = -2.9179 \mu \text{ Hz}$
 $a_1 = 0.0032565$
 $a_2 = -8.2543e-07 \mu\text{Hz}^{-1}$
 $c_0 = 0.0080203$
 $c_2 = 1.0251e-06 \mu\text{Hz}^{-2}$
 $\tau_{\text{HeII}} = 1037.5 \text{ s}$
 $\phi_{\text{HeII}} = 4.9326$
 $b_2 = 5.0296e+05 \text{ mHz}^3$
 $\tau_{\text{CZ}} = 3497.8 \text{ s}$
 $\phi_{\text{CZ}} = 0.7912$
 $d_0 = 0.018609$
 $d_2 = 1.9388e-06 \mu\text{Hz}^{-2}$
 $\tau_{\text{HI}} = 457.55 \text{ s}$
 $\phi_{\text{HI}} = 5.029$

profile52

$\chi^2_\nu(\text{dof} = 55) = 0.0024091$

Age after ZAMS: 9.657 Gyr



$$a_0 = -2.5855 \mu\text{Hz}$$

$$a_1 = 0.0029341$$

$$a_2 = -7.5127e-07 \mu\text{Hz}^{-2}$$

$$c_0 = 0.0066948$$

$$c_2 = 9.7379e-07 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HeII}} = 1037.4 \text{ s}$$

$$\phi_{\text{HeII}} = 5.0845$$

$$b_2 = 4.5212e+05 \text{ mHz}^3$$

$$\tau_{\text{CZ}} = 3501.3 \text{ s}$$

$$\phi_{\text{CZ}} = 1.0902$$

$$d_0 = 0.040429$$

$$d_2 = 2.2532e-06 \mu\text{Hz}^{-2}$$

$$\tau_{\text{HI}} = 259.75 \text{ s}$$

$$\phi_{\text{HI}} = 2.0604$$

profile53

$$\chi^2_{\nu}(\text{dof} = 55) = 0.0025253$$