Table 4. Best fit parameters and 1σ error bars[a)] for the optical + UV fits of 39 stars where we fitted 12 free parameters.

Source	$\log L/\mathrm{L}_\odot$	T_eff(K)	$\log g$	$R_\star/\mathrm{R}_\odot$	$\log \dot{M}$	v_∞ (km/s)	$v_\mathrm{windturb}/v_\infty$	f_cl	f_ic	f_vel	β	$v_\mathrm{cl,start}/v_\infty$	$\log(\frac{n_\mathrm{C}}{n_\mathrm{H}})+12$	$\log(\frac{n_\mathrm{N}}{n_\mathrm{H}})+12$
R136a1[b)]	$6.86\pm^{0.04}_{0.07}$	$46000\pm^{1250}_{2375}$	$3.65\pm^{0.20}_{0.20}$	$42.7\pm^{1.6}_{0.9}$	$-4.57\pm^{0.13}_{0.03}$	$3150\pm^{300}_{250}$	$0.04\pm^{0.05}_{0.03}$	$43\pm^{7}_{20}$	$0.48\pm^{0.03}_{0.12}$	$0.97\pm^{0.05}_{0.25}$	$1.18\pm^{0.23}_{0.17}$	$0.03\pm^{0.05}_{0.03}$	$7.60\pm^{0.28}_{0.60}$	$8.75\pm^{0.20}_{0.25}$
R136a2[b)]	$6.71\pm^{0.03}_{0.03}$	$47000\pm^{1000}_{625}$	$3.55\pm^{0.25}_{0.05}$	$34.7\pm^{0.7}_{0.8}$	$-4.48\pm^{0.12}_{0.06}$	$2900\pm^{300}_{200}$	$0.07\pm^{0.03}_{0.06}$	$29\pm^{4}_{13}$	$0.50\pm^{0.01}_{0.42}$	$1.00\pm^{0.03}_{0.10}$	$1.18\pm^{0.17}_{0.23}$	$0.03\pm^{0.07}_{0.03}$	$7.20\pm^{0.45}_{0.23}$	$9.05\pm^{0.25}_{0.15}$
R136a3[b,c)]	$6.70\pm^{0.02}_{0.02}$	$50000\pm^{2500}_{8000}$	$4.05\pm^{1.00}_{0.40}$	$30.2\pm^{0.6}_{0.6}$	$-4.64\pm^{0.08}_{0.05}$	$2700\pm^{300}_{400}$	$0.07\pm^{0.10}_{0.07}$	$46\pm^{5}_{16}$	$0.41\pm^{0.10}_{0.25}$	$1.00\pm^{0.03}_{0.03}$	$1.30\pm^{0.17}_{0.25}$	$0.02\pm^{0.09}_{0.02}$	$7.75\pm^{0.42}_{0.78}$	$9.15\pm^{0.25}_{0.25}$
R136a4	$6.28\pm^{0.02}_{0.05}$	$50000\pm^{500}_{2000}$	$4.15\pm^{0.20}_{0.15}$	$18.5\pm^{0.5}_{0.3}$	$-5.84\pm^{0.08}_{0.10}$	$3150\pm^{75}_{150}$	$0.14\pm^{0.03}_{0.07}$	$49\pm^{1}_{14}$	$0.00\pm^{0.03}_{0.01}$	$0.45\pm^{0.07}_{0.07}$	$0.72\pm^{0.06}_{0.05}$	$0.03\pm^{0.03}_{0.03}$	$7.38\pm^{0.23}_{0.12}$	$7.90\pm^{0.25}_{0.45}$
R136a5	$6.32\pm^{0.03}_{0.03}$	$48000\pm^{750}_{750}$	$4.35\pm^{0.17}_{0.35}$	$21.1\pm^{0.4}_{0.4}$	$-5.09\pm^{0.10}_{0.10}$	$3250\pm^{200}_{200}$	$0.06\pm^{0.04}_{0.03}$	$16\pm^{5}_{7}$	$0.44\pm^{0.04}_{0.09}$	$0.30\pm^{0.29}_{0.10}$	$1.10\pm^{0.07}_{0.10}$	$0.11\pm^{0.03}_{0.05}$	$7.03\pm^{0.17}_{0.05}$	$8.30\pm^{0.30}_{0.40}$
R136a6	$6.24\pm^{0.03}_{0.07}$	$52000\pm^{1000}_{3000}$	$4.00\pm^{0.10}_{0.20}$	$16.4\pm^{0.5}_{0.3}$	$-5.60\pm^{0.11}_{0.08}$	$3200\pm^{150}_{150}$	$0.18\pm^{0.01}_{0.05}$	$34\pm^{8}_{12}$	$0.19\pm^{0.13}_{0.14}$	$0.70\pm^{0.17}_{0.11}$	$0.78\pm^{0.12}_{0.10}$	$0.05\pm^{0.04}_{0.05}$	$7.53\pm^{0.09}_{0.50}$	$7.80\pm^{0.33}_{0.45}$
R136a7	$6.36\pm^{0.05}_{0.07}$	$54000\pm^{2000}_{3000}$	$4.30\pm^{0.23}_{0.40}$	$17.5\pm^{0.5}_{0.4}$	$-5.52\pm^{0.18}_{0.10}$	$2900\pm^{150}_{150}$	$0.15\pm^{0.04}_{0.07}$	$12\pm^{6}_{6}$	$0.39\pm^{0.10}_{0.18}$	$0.25\pm^{0.42}_{0.12}$	$0.93\pm^{0.15}_{0.15}$	$0.02\pm^{0.06}_{0.02}$	$7.70\pm^{0.25}_{0.30}$	$7.10\pm^{0.85}_{0.25}$
R136a8	$6.17\pm^{0.03}_{0.03}$	$49500\pm^{1250}_{1250}$	$4.25\pm^{0.30}_{0.25}$	$16.6\pm^{0.4}_{0.3}$	$-5.82\pm^{0.10}_{0.10}$	$3000\pm^{75}_{150}$	$0.11\pm^{0.04}_{0.02}$	$37\pm^{8}_{12}$	$0.13\pm^{0.05}_{0.06}$	$0.42\pm^{0.06}_{0.25}$	$0.70\pm^{0.06}_{0.03}$	$0.02\pm^{0.06}_{0.02}$	$7.72\pm^{0.35}_{0.07}$	$6.95\pm^{0.55}_{0.10}$
R136b	$6.35\pm^{0.03}_{0.03}$	$35500\pm^{750}_{750}$	$3.55\pm^{0.25}_{0.12}$	$40.0\pm^{0.8}_{0.8}$	$-5.15\pm^{0.05}_{0.10}$	$1850\pm^{75}_{50}$	$0.06\pm^{0.01}_{0.03}$	$20\pm^{6}_{2}$	$0.45\pm^{0.04}_{0.07}$	$0.95\pm^{0.05}_{0.15}$	$1.50\pm^{0.17}_{0.03}$	$0.03\pm^{0.06}_{0.02}$	$7.28\pm^{0.10}_{0.15}$	$9.20\pm^{0.10}_{0.15}$
H30	$5.76\pm^{0.05}_{0.03}$	$40000\pm^{1500}_{1000}$	$4.20\pm^{0.35}_{0.15}$	$15.9\pm^{0.3}_{0.4}$	$-6.09\pm^{0.11}_{0.29}$	$2650\pm^{250}_{150}$	$0.13\pm^{0.07}_{0.09}$	$31\pm^{14}_{14}$	$0.01\pm^{0.03}_{0.01}$	$0.10\pm^{0.10}_{0.05}$	$0.70\pm^{0.12}_{0.03}$	$0.28\pm^{0.04}_{0.27}$	$7.15\pm^{0.16}_{0.17}$	$8.50\pm^{0.25}_{1.00}$
H31	$5.98\pm^{0.03}_{0.03}$	$47500\pm^{1000}_{750}$	$4.00\pm^{0.10}_{0.15}$	$14.6\pm^{0.3}_{0.3}$	$-6.15\pm^{0.11}_{0.08}$	$3050\pm^{100}_{75}$	$0.15\pm^{0.04}_{0.02}$	$42\pm^{9}_{12}$	$0.14\pm^{0.06}_{0.04}$	$0.47\pm^{0.09}_{0.09}$	$0.70\pm^{0.07}_{0.03}$	$0.02\pm^{0.08}_{0.02}$	$7.67\pm^{0.20}_{0.12}$	$6.90\pm^{0.38}_{0.05}$
H35	$5.82\pm^{0.04}_{0.03}$	$47500\pm^{1500}_{1000}$	$4.08\pm^{0.28}_{0.07}$	$12.1\pm^{0.2}_{0.3}$	$-5.97\pm^{0.05}_{0.25}$	$3050\pm^{150}_{150}$	$0.13\pm^{0.06}_{0.04}$	$21\pm^{15}_{7}$	$0.08\pm^{0.04}_{0.05}$	$0.35\pm^{0.09}_{0.10}$	$0.70\pm^{0.07}_{0.03}$	$0.01\pm^{0.07}_{0.01}$	$7.58\pm^{0.23}_{0.15}$	$7.00\pm^{0.25}_{0.15}$
H36	$6.27\pm^{0.03}_{0.03}$	$49500\pm^{750}_{1000}$	$4.10\pm^{0.35}_{0.20}$	$18.6\pm^{0.4}_{0.4}$	$-5.29\pm^{0.05}_{0.10}$	$3900\pm^{150}_{75}$	$0.08\pm^{0.03}_{0.02}$	$31\pm^{12}_{3}$	$0.49\pm^{0.02}_{0.10}$	$0.25\pm^{0.38}_{0.15}$	$1.05\pm^{0.14}_{0.10}$	$0.03\pm^{0.04}_{0.03}$	$8.07\pm^{0.12}_{0.36}$	$8.05\pm^{0.20}_{0.35}$
H40	$5.93\pm^{0.05}_{0.09}$	$47500\pm^{2000}_{3250}$	$3.90\pm^{0.20}_{0.17}$	$13.8\pm^{0.6}_{0.3}$	$-6.12\pm^{0.14}_{0.18}$	$3250\pm^{100}_{150}$	$0.04\pm^{0.06}_{0.03}$	$44\pm^{7}_{27}$	$0.02\pm^{0.14}_{0.01}$	$0.60\pm^{0.17}_{0.16}$	$0.70\pm^{0.10}_{0.03}$	$0.27\pm^{0.07}_{0.27}$	$8.18\pm^{0.03}_{0.47}$	$6.95\pm^{0.70}_{0.10}$
H45	$5.80\pm^{0.07}_{0.03}$	$41500\pm^{2500}_{1000}$	$4.15\pm^{0.17}_{0.30}$	$15.5\pm^{0.3}_{0.5}$	$-6.27\pm^{0.08}_{0.35}$	$3100\pm^{200}_{250}$	$0.17\pm^{0.03}_{0.09}$	$28\pm^{18}_{13}$	$0.03\pm^{0.10}_{0.02}$	$0.05\pm^{0.14}_{0.05}$	$0.70\pm^{0.24}_{0.03}$	$0.39\pm^{0.01}_{0.19}$	$7.47\pm^{0.38}_{0.23}$	$7.20\pm^{0.85}_{0.30}$
H46	$6.10\pm^{0.02}_{0.06}$	$47500\pm^{500}_{2500}$	$3.90\pm^{0.55}_{0.15}$	$16.7\pm^{0.5}_{0.3}$	$-5.15\pm^{0.18}_{0.06}$	$3650\pm^{200}_{200}$	$0.09\pm^{0.05}_{0.06}$	$4\pm^{3}_{4}$	$0.39\pm^{0.11}_{0.20}$	$0.82\pm^{0.17}_{0.45}$	$1.05\pm^{0.17}_{0.14}$	$0.36\pm^{0.05}_{0.15}$	$7.40\pm^{0.39}_{0.17}$	$7.80\pm^{0.23}_{0.95}$
H47	$5.98\pm^{0.05}_{0.03}$	$43500\pm^{1750}_{1000}$	$4.45\pm^{0.30}_{0.50}$	$17.3\pm^{0.4}_{0.4}$	$-5.25\pm^{0.08}_{0.11}$	$3450\pm^{150}_{150}$	$0.03\pm^{0.04}_{0.01}$	$6\pm^{7}_{4}$	$0.30\pm^{0.11}_{0.18}$	$0.05\pm^{0.49}_{0.05}$	$0.95\pm^{0.15}_{0.12}$	$0.40\pm^{0.01}_{0.18}$	$7.33\pm^{0.45}_{0.33}$	$7.05\pm^{0.35}_{0.15}$
H48	$5.96\pm^{0.03}_{0.04}$	$46500\pm^{1000}_{1500}$	$3.90\pm^{0.23}_{0.07}$	$14.9\pm^{0.4}_{0.3}$	$-5.60\pm^{0.09}_{0.10}$	$3200\pm^{150}_{100}$	$0.17\pm^{0.01}_{0.05}$	$9\pm^{6}_{3}$	$0.18\pm^{0.18}_{0.05}$	$0.60\pm^{0.20}_{0.28}$	$0.93\pm^{0.24}_{0.15}$	$0.02\pm^{0.20}_{0.02}$	$7.25\pm^{0.38}_{0.07}$	$7.60\pm^{0.35}_{0.33}$
H49	$5.76\pm^{0.09}_{0.04}$	$44000\pm^{3500}_{1500}$	$3.85\pm^{0.55}_{0.30}$	$13.1\pm^{0.3}_{0.5}$	$-6.22\pm^{0.10}_{0.33}$	$3300\pm^{150}_{200}$	$0.12\pm^{0.07}_{0.06}$	$38\pm^{13}_{15}$	$0.18\pm^{0.23}_{0.10}$	$0.20\pm^{0.40}_{0.15}$	$0.72\pm^{0.20}_{0.05}$	$0.02\pm^{0.17}_{0.02}$	$7.12\pm^{0.36}_{0.15}$	$7.15\pm^{0.88}_{0.30}$
H50	$5.85\pm^{0.05}_{0.04}$	$47000\pm^{2000}_{1250}$	$4.15\pm^{0.15}_{0.15}$	$12.8\pm^{0.3}_{0.3}$	$-6.12\pm^{0.03}_{0.23}$	$2850\pm^{200}_{75}$	$0.20\pm^{0.01}_{0.04}$	$15\pm^{32}_{2}$	$0.07\pm^{0.07}_{0.03}$	$0.25\pm^{0.17}_{0.07}$	$0.70\pm^{0.09}_{0.03}$	$0.06\pm^{0.11}_{0.04}$	$7.83\pm^{0.20}_{0.33}$	$7.05\pm^{0.40}_{0.15}$
H52	$5.70\pm^{0.04}_{0.04}$	$45500\pm^{1500}_{1500}$	$4.05\pm^{0.24}_{0.12}$	$11.5\pm^{0.3}_{0.2}$	$-6.22\pm^{0.10}_{0.20}$	$2900\pm^{150}_{100}$	$0.20\pm^{0.01}_{0.07}$	$36\pm^{15}_{19}$	$0.08\pm^{0.06}_{0.05}$	$0.17\pm^{0.15}_{0.10}$	$0.75\pm^{0.10}_{0.07}$	$0.02\pm^{0.07}_{0.02}$	$7.45\pm^{0.33}_{0.20}$	$7.75\pm^{0.70}_{0.45}$
H55	$5.77\pm^{0.08}_{0.04}$	$47500\pm^{3000}_{1500}$	$3.95\pm^{0.25}_{0.12}$	$11.5\pm^{0.3}_{0.4}$	$-6.27\pm^{0.14}_{0.20}$	$3150\pm^{75}_{200}$	$0.10\pm^{0.05}_{0.04}$	$28\pm^{16}_{10}$	$0.22\pm^{0.13}_{0.13}$	$0.30\pm^{0.21}_{0.15}$	$0.72\pm^{0.07}_{0.05}$	$0.02\pm^{0.15}_{0.02}$	$7.75\pm^{0.38}_{0.39}$	$7.05\pm^{0.47}_{0.20}$
H58	$5.87\pm^{0.08}_{0.06}$	$47500\pm^{3000}_{2250}$	$4.40\pm^{0.23}_{0.35}$	$12.8\pm^{0.4}_{0.4}$	$-6.52\pm^{0.18}_{0.25}$	$3000\pm^{100}_{200}$	$0.15\pm^{0.06}_{0.05}$	$32\pm^{17}_{14}$	$0.11\pm^{0.18}_{0.04}$	$0.30\pm^{0.15}_{0.23}$	$0.70\pm^{0.11}_{0.03}$	$0.22\pm^{0.10}_{0.22}$	$8.18\pm^{0.05}_{0.28}$	$7.00\pm^{0.70}_{0.15}$
H62	$5.63\pm^{0.08}_{0.07}$	$45000\pm^{3000}_{2250}$	$4.05\pm^{0.28}_{0.20}$	$10.8\pm^{0.3}_{0.4}$	$-6.02\pm^{0.10}_{0.15}$	$3050\pm^{125}_{150}$	$0.20\pm^{0.01}_{0.05}$	$15\pm^{28}_{4}$	$0.05\pm^{0.07}_{0.02}$	$0.38\pm^{0.10}_{0.19}$	$0.72\pm^{0.28}_{0.05}$	$0.09\pm^{0.14}_{0.06}$	$7.15\pm^{0.41}_{0.17}$	$7.15\pm^{0.93}_{0.30}$
H64	$5.85\pm^{0.05}_{0.07}$	$46000\pm^{2000}_{2500}$	$4.30\pm^{0.25}_{0.40}$	$13.3\pm^{0.4}_{0.3}$	$-6.67\pm^{0.25}_{0.25}$	$2250\pm^{250}_{150}$	$0.20\pm^{0.01}_{0.10}$	$37\pm^{13}_{14}$	$0.02\pm^{0.05}_{0.02}$	$0.30\pm^{0.10}_{0.15}$	$0.70\pm^{0.25}_{0.03}$	$0.01\pm^{0.14}_{0.01}$	$8.05\pm^{0.17}_{0.39}$	$7.25\pm^{0.88}_{0.40}$
H65	$5.73\pm^{0.06}_{0.04}$	$42000\pm^{2000}_{1500}$	$3.85\pm^{0.38}_{0.15}$	$13.9\pm^{0.3}_{0.4}$	$-6.07\pm^{0.15}_{0.28}$	$2700\pm^{150}_{150}$	$0.14\pm^{0.06}_{0.05}$	$25\pm^{15}_{12}$	$0.10\pm^{0.14}_{0.06}$	$0.03\pm^{0.28}_{0.03}$	$0.72\pm^{0.20}_{0.05}$	$0.14\pm^{0.14}_{0.07}$	$7.30\pm^{0.36}_{0.20}$	$7.45\pm^{0.68}_{0.55}$
H66	$5.66\pm^{0.04}_{0.04}$	$47500\pm^{1500}_{1500}$	$4.10\pm^{0.20}_{0.10}$	$10.1\pm^{0.2}_{0.2}$	$-6.22\pm^{0.10}_{0.09}$	$2700\pm^{125}_{100}$	$0.20\pm^{0.01}_{0.05}$	$42\pm^{7}_{5}$	$0.07\pm^{0.04}_{0.03}$	$0.10\pm^{0.14}_{0.05}$	$0.70\pm^{0.09}_{0.03}$	$0.01\pm^{0.05}_{0.01}$	$7.70\pm^{0.04}_{0.35}$	$7.00\pm^{0.95}_{0.07}$
H68	$5.68\pm^{0.07}_{0.07}$	$42000\pm^{2250}_{2500}$	$3.95\pm^{0.30}_{0.17}$	$13.2\pm^{0.4}_{0.4}$	$-6.62\pm^{0.18}_{0.30}$	$2650\pm^{350}_{250}$	$0.18\pm^{0.02}_{0.07}$	$30\pm^{18}_{11}$	$0.01\pm^{0.06}_{0.01}$	$0.05\pm^{0.11}_{0.05}$	$0.75\pm^{0.11}_{0.07}$	$0.31\pm^{0.05}_{0.14}$	$8.15\pm^{0.05}_{0.56}$	$8.15\pm^{0.40}_{1.25}$
H69	$5.47\pm^{0.06}_{0.04}$	$41000\pm^{2000}_{1500}$	$4.15\pm^{0.23}_{0.30}$	$10.9\pm^{0.3}_{0.3}$	$-6.83\pm^{0.40}_{0.20}$	$3050\pm^{200}_{250}$	$0.20\pm^{0.01}_{0.10}$	$50\pm^{1}_{35}$	$0.04\pm^{0.04}_{0.04}$	$0.05\pm^{0.23}_{0.05}$	$0.78\pm^{0.19}_{0.10}$	$0.35\pm^{0.03}_{0.21}$	$7.58\pm^{0.31}_{0.40}$	$7.00\pm^{1.35}_{0.15}$
H70	$5.71\pm^{0.06}_{0.05}$	$45500\pm^{2250}_{2000}$	$4.15\pm^{0.50}_{0.17}$	$11.7\pm^{0.3}_{0.3}$	$-6.32\pm^{0.13}_{0.15}$	$2600\pm^{300}_{125}$	$0.16\pm^{0.04}_{0.13}$	$49\pm^{2}_{18}$	$0.09\pm^{0.11}_{0.06}$	$0.03\pm^{0.17}_{0.03}$	$0.70\pm^{0.23}_{0.03}$	$0.02\pm^{0.15}_{0.02}$	$7.15\pm^{0.36}_{0.17}$	$7.05\pm^{0.85}_{0.20}$
H71	$5.47\pm^{0.07}_{0.07}$	$45000\pm^{2500}_{2500}$	$3.90\pm^{0.20}_{0.20}$	$9.1\pm^{0.3}_{0.3}$	$-6.57\pm^{0.10}_{0.50}$	$2650\pm^{150}_{150}$	$0.15\pm^{0.04}_{0.05}$	$21\pm^{29}_{8}$	$0.05\pm^{0.08}_{0.03}$	$0.23\pm^{0.09}_{0.17}$	$0.70\pm^{0.21}_{0.03}$	$0.01\pm^{0.24}_{0.01}$	$7.83\pm^{0.40}_{0.39}$	$7.75\pm^{0.65}_{0.60}$
H75	$5.47\pm^{0.05}_{0.05}$	$46000\pm^{2000}_{2000}$	$4.45\pm^{0.28}_{0.25}$	$8.6\pm^{0.2}_{0.2}$	$-6.47\pm^{0.10}_{0.35}$	$2700\pm^{200}_{150}$	$0.15\pm^{0.05}_{0.07}$	$26\pm^{25}_{10}$	$0.11\pm^{0.24}_{0.06}$	$0.05\pm^{0.23}_{0.05}$	$0.72\pm^{0.12}_{0.05}$	$0.04\pm^{0.13}_{0.04}$	$7.53\pm^{0.35}_{0.40}$	$7.35\pm^{0.82}_{0.45}$
H78	$5.52\pm^{0.03}_{0.11}$	$46000\pm^{1000}_{4000}$	$4.00\pm^{0.20}_{0.20}$	$9.1\pm^{0.4}_{0.2}$	$-6.67\pm^{0.30}_{0.18}$	$2700\pm^{125}_{150}$	$0.15\pm^{0.05}_{0.07}$	$44\pm^{4}_{29}$	$0.16\pm^{0.14}_{0.06}$	$0.07\pm^{0.12}_{0.07}$	$0.70\pm^{0.11}_{0.03}$	$0.06\pm^{0.21}_{0.03}$	$7.58\pm^{0.23}_{0.42}$	$7.25\pm^{0.33}_{0.40}$
H80	$5.12\pm^{0.03}_{0.06}$	$35500\pm^{1000}_{1750}$	$3.90\pm^{0.25}_{0.25}$	$9.6\pm^{0.3}_{0.2}$	$-8.29\pm^{0.20}_{0.48}$	$2400\pm^{300}_{250}$	$0.07\pm^{0.09}_{0.08}$	$32\pm^{19}_{23}$	$0.08\pm^{0.21}_{0.08}$	$0.03\pm^{0.42}_{0.03}$	$0.70\pm^{0.31}_{0.03}$	$0.34\pm^{0.07}_{0.17}$	$8.18\pm^{0.05}_{0.39}$	$7.60\pm^{0.70}_{0.45}$
H86	$5.38\pm^{0.06}_{0.03}$	$45500\pm^{2500}_{1000}$	$3.85\pm^{0.23}_{0.20}$	$8.0\pm^{0.2}_{0.3}$	$-6.35\pm^{0.05}_{0.19}$	$2750\pm^{200}_{100}$	$0.15\pm^{0.05}_{0.07}$	$26\pm^{22}_{7}$	$0.15\pm^{0.16}_{0.04}$	$0.15\pm^{0.16}_{0.10}$	$0.72\pm^{0.28}_{0.03}$	$0.03\pm^{0.06}_{0.03}$	$7.00\pm^{0.35}_{0.03}$	$7.15\pm^{0.57}_{0.30}$
H90	$5.35\pm^{0.11}_{0.06}$	$42000\pm^{4000}_{2000}$	$3.95\pm^{0.40}_{0.12}$	$9.0\pm^{0.3}_{0.4}$	$-6.62\pm^{0.20}_{0.40}$	$2800\pm^{300}_{250}$	$0.20\pm^{0.01}_{0.10}$	$22\pm^{28}_{16}$	$0.04\pm^{0.17}_{0.03}$	$0.07\pm^{0.19}_{0.07}$	$0.70\pm^{0.21}_{0.03}$	$0.21\pm^{0.15}_{0.17}$	$7.62\pm^{0.47}_{0.33}$	$7.40\pm^{0.60}_{0.55}$
H92	$5.24\pm^{0.04}_{0.03}$	$40000\pm^{1250}_{750}$	$4.15\pm^{0.17}_{0.30}$	$8.8\pm^{0.2}_{0.2}$	$-7.69\pm^{0.35}_{0.30}$	$2700\pm^{150}_{300}$	$0.20\pm^{0.01}_{0.10}$	$50\pm^{1}_{26}$	$0.09\pm^{0.20}_{0.04}$	$0.03\pm^{0.30}_{0.03}$	$0.78\pm^{0.17}_{0.10}$	$0.19\pm^{0.16}_{0.19}$	$8.18\pm^{0.05}_{0.44}$	$7.75\pm^{0.65}_{0.85}$
H94	$5.38\pm^{0.08}_{0.05}$	$44500\pm^{3000}_{1750}$	$3.95\pm^{0.28}_{0.20}$	$8.3\pm^{0.2}_{0.3}$	$-7.19\pm^{0.25}_{0.25}$	$2550\pm^{150}_{150}$	$0.18\pm^{0.03}_{0.09}$	$43\pm^{8}_{16}$	$0.12\pm^{0.22}_{0.05}$	$0.05\pm^{0.41}_{0.05}$	$0.75\pm^{0.17}_{0.07}$	$0.03\pm^{0.18}_{0.03}$	$8.20\pm^{0.03}_{0.28}$	$6.95\pm^{0.70}_{0.10}$
H143	$5.16\pm^{0.06}_{0.10}$	$40000\pm^{2000}_{3000}$	$3.75\pm^{0.40}_{0.20}$	$8.0\pm^{0.4}_{0.2}$	$-7.79\pm^{0.40}_{0.25}$	$1950\pm^{250}_{250}$	$0.20\pm^{0.01}_{0.20}$	$18\pm^{31}_{9}$	$0.10\pm^{0.20}_{0.09}$	$0.07\pm^{0.21}_{0.07}$	$0.72\pm^{0.31}_{0.05}$	$0.01\pm^{0.34}_{0.01}$	$8.20\pm^{0.03}_{0.53}$	$6.95\pm^{1.25}_{0.10}$

[a)] Note that when the error bar reaches the edge of the parameter space, the best fit value is in fact an upper or lower limit. Figure 8 shows when this is the case.
[b)] Run with 14 free parameters. Values for the helium and oxygen surface abundance can be found in Table 6.
[c)] Formal uncertainties from the Kiwi-GA run with fixed, estimated T_eff of 50 kK (see text). In reality uncertainties on all parameters for this source are larger due to the uncertain T_eff.

Table 5. Best fit parameters and 1σ error bars[a)] for the optical + UV fits of the 17 stars where we fitted 6 free parameters.

Source	$\log L/L_\odot$	$T_{\rm eff}$(K)	$\log g$	$R_\star/R_\odot$	$\log \dot{M}$	v_∞ (km/s)	$f_{\rm cl}$	β
H73	$5.18\pm^{0.09}_{0.12}$	$32500\pm^{2500}_{3000}$	$4.10\pm^{0.35}_{0.23}$	$12.4\pm^{0.7}_{0.5}$	$-8.48\pm^{0.28}_{0.95}$	$4000\pm^{600}_{2800}$	$1\pm^{25}_{1}$	$0.90\pm^{0.85}_{0.20}$
H108	$4.89\pm^{0.10}_{0.18}$	$40000\pm^{3500}_{5000}$	$4.05\pm^{0.42}_{0.38}$	$5.9\pm^{0.5}_{0.2}$	$-8.09\pm^{0.35}_{0.50}$	$1350\pm^{525}_{350}$	$31\pm^{20}_{25}$	$0.70\pm^{0.61}_{0.03}$
H112	$5.11\pm^{0.11}_{0.12}$	$35500\pm^{3250}_{3250}$	$4.10\pm^{0.47}_{0.38}$	$9.5\pm^{0.5}_{0.4}$	$-8.40\pm^{0.40}_{0.40}$	$1300\pm^{875}_{425}$	$37\pm^{14}_{31}$	$0.70\pm^{0.61}_{0.03}$
H114	$5.22\pm^{0.07}_{0.11}$	$44500\pm^{2500}_{4000}$	$4.20\pm^{0.38}_{0.35}$	$6.9\pm^{0.3}_{0.2}$	$-7.48\pm^{0.30}_{0.40}$	$2100\pm^{725}_{400}$	$46\pm^{5}_{32}$	$0.70\pm^{0.59}_{0.03}$
H116	$4.87\pm^{0.13}_{0.12}$	$36000\pm^{4000}_{3250}$	$4.05\pm^{0.40}_{0.30}$	$7.0\pm^{0.4}_{0.4}$	$-8.68\pm^{0.50}_{0.75}$	$1900\pm^{1350}_{600}$	$45\pm^{6}_{41}$	$0.70\pm^{0.66}_{0.03}$
H120	$4.85\pm^{0.05}_{0.27}$	$40000\pm^{1500}_{8000}$	$4.45\pm^{0.23}_{0.65}$	$5.6\pm^{0.7}_{0.1}$	$-7.99\pm^{0.30}_{0.50}$	$1600\pm^{975}_{300}$	$37\pm^{13}_{35}$	$0.72\pm^{0.42}_{0.05}$
H121	$4.79\pm^{0.10}_{0.14}$	$33500\pm^{3000}_{3500}$	$4.05\pm^{0.30}_{0.35}$	$7.4\pm^{0.5}_{0.3}$	$-8.42\pm^{0.23}_{1.10}$	$4300\pm^{300}_{3400}$	$1\pm^{49}_{1}$	$0.75\pm^{0.64}_{0.07}$
H123	$4.93\pm^{0.06}_{0.04}$	$40000\pm^{2000}_{1250}$	$4.00\pm^{0.30}_{0.25}$	$6.1\pm^{0.1}_{0.2}$	$-7.69\pm^{0.20}_{0.30}$	$2000\pm^{350}_{250}$	$40\pm^{11}_{23}$	$0.70\pm^{0.26}_{0.03}$
H129	$4.48\pm^{0.12}_{0.10}$	$42000\pm^{4500}_{3250}$	$4.25\pm^{0.55}_{0.40}$	$3.3\pm^{0.2}_{0.2}$	$-8.09\pm^{0.35}_{0.75}$	$1300\pm^{1350}_{300}$	$9\pm^{41}_{7}$	$0.70\pm^{0.66}_{0.03}$
H132	$5.04\pm^{0.10}_{0.07}$	$40000\pm^{3500}_{2500}$	$4.20\pm^{0.40}_{0.30}$	$6.9\pm^{0.2}_{0.3}$	$-8.34\pm^{0.55}_{0.65}$	$1300\pm^{1650}_{500}$	$43\pm^{8}_{37}$	$0.70\pm^{1.25}_{0.03}$
H134	$4.75\pm^{0.16}_{0.10}$	$36000\pm^{5000}_{2750}$	$4.05\pm^{0.42}_{0.35}$	$6.1\pm^{0.3}_{0.4}$	$-8.09\pm^{0.48}_{0.38}$	$2000\pm^{750}_{500}$	$36\pm^{15}_{25}$	$0.70\pm^{0.54}_{0.03}$
H135	$4.71\pm^{0.15}_{0.17}$	$29000\pm^{4000}_{4000}$	$3.90\pm^{0.30}_{0.35}$	$9.0\pm^{0.7}_{0.5}$	$-8.25\pm^{0.60}_{0.63}$	$400\pm^{1950}_{300}$	$41\pm^{10}_{35}$	$1.30\pm^{0.72}_{0.60}$
H139	$4.91\pm^{0.06}_{0.10}$	$40000\pm^{2000}_{3000}$	$4.15\pm^{0.40}_{0.30}$	$6.0\pm^{0.3}_{0.2}$	$-8.20\pm^{0.23}_{0.63}$	$1300\pm^{500}_{300}$	$42\pm^{9}_{32}$	$0.70\pm^{0.66}_{0.03}$
H141	$4.69\pm^{0.19}_{0.12}$	$30000\pm^{5500}_{3000}$	$3.80\pm^{0.70}_{0.40}$	$8.3\pm^{0.5}_{0.6}$	$-7.56\pm^{0.60}_{0.65}$	$4300\pm^{300}_{2500}$	$47\pm^{4}_{42}$	$0.70\pm^{0.66}_{0.03}$
H159	$4.71\pm^{0.07}_{0.10}$	$31000\pm^{2000}_{2500}$	$3.95\pm^{0.35}_{0.30}$	$7.9\pm^{0.4}_{0.3}$	$-7.71\pm^{0.35}_{0.35}$	$4100\pm^{500}_{1500}$	$42\pm^{9}_{25}$	$1.30\pm^{0.72}_{0.57}$
H162	$4.81\pm^{0.15}_{0.25}$	$36000\pm^{4750}_{6500}$	$4.30\pm^{0.75}_{0.65}$	$6.6\pm^{0.8}_{0.4}$	$-8.47\pm^{1.05}_{1.05}$	$100\pm^{4400}_{100}$	$46\pm^{5}_{46}$	$1.02\pm^{1.00}_{0.35}$
H173	$4.46\pm^{0.18}_{0.23}$	$26500\pm^{4500}_{4250}$	$3.85\pm^{0.50}_{0.42}$	$8.1\pm^{0.9}_{0.6}$	$-8.15\pm^{0.43}_{0.90}$	$3700\pm^{900}_{3400}$	$49\pm^{2}_{31}$	$0.70\pm^{1.32}_{0.03}$

[a)] Note that when the error bar reaches the edge of the parameter space, the best fit value is in fact an upper or lower limit. Figure 9 shows when this is the case.

Table 6. Best fit parameters and 1σ error bars for the oxygen and helium abundances of the optical + UV runs of the WNh stars. Only for these stars oxygen and helium abundance were fitted in the optical + UV runs.

Source	$x_{\rm He}$	$\log n_{\rm O}/n_{\rm H}+12$
R136a1	0.22 ± 0.05	$8.30\pm^{0.05}_{0.65}$
R136a2	$0.39\pm^{0.11}_{0.07}$	$7.80\pm^{0.50}_{0.20}$
R136a3	0.37 ± 0.10	$7.45\pm^{0.70}_{0.75}$

tial rotational velocity, for which we assume the distribution of Ramírez-Agudelo et al. (2013) instead of a flat distribution. We find a robust output for all stars except three. For those the observed values match poorly with the posterior distribution of the Bonnsai run. In the case of H129 the value for $T_{\rm eff}$ cannot be reproduced given the observed $\log L/L_\odot$ and $\log g$. For this star, we deemed our derived luminosity measurement unreliable (Sect. 4.1), and we exclude this source from further analysis. In two other cases, R136b and H30, our observed $\log g$ value lies in the $P < 0.05$ tail of the posterior distribution. Therefore both spectroscopic and evolutionary parameters should be treated with care, although the spectroscopic fits of these stars look good. We do include both sources in further analyses that need $M_{\rm evol}$ as an input, but check whether the results change drastically upon inclusion/exclusion of R136b and H30, which is not the case. The derived ages and masses can be found in Table H.2. We cross-check our Bonnsai output with that of Bestenlehner et al. (2020) and find generally good agreement, see Appendix D for details. In the remainder of the paper we will use the Bonnsai evolutionary masses when we need stellar masses for our analysis.

4.3. Terminal velocity

For all stars we have set the terminal wind velocity v_∞ as a free parameter in the optical + UV fit. For 46 sources we were able to accurately constrain v_∞, albeit with large uncertainties for the stars with lower mass-loss rates (see Figs. 8 and 9). For 3 of the remaining sources (R136a2, R136b, H36) we do find a tightly constrained value, but see that the fit to the blue wing of C iv $\lambda\lambda$1548-1551 is not good: the saturated absorption edge of the best model for these stars extends about 400 km s^{-1} more to the blue as the absorption edge we see in the data. For the remaining 7 sources (H73, H121, H135, H141, H159, H162, H173) the wind lines crucial for determining v_∞, especially C iv $\lambda\lambda$1548-1551, turn out to be too weak to get a constraint: the χ^2 distribution for v_∞ was flat. In these cases, while we do find some best fit value v_∞, this value is not meaningful and we regard v_∞ as unconstrained.

4.4. Wind acceleration parameter β

The wind acceleration parameter β is fitted for all stars. For stars with $\log \dot{M} > -5.7$, we find values up to $\beta = 1.50$ with an average of 1.08 ± 0.20, whereas for stars with lower mass-loss rates we find that for all but two sources β is consistent with 0.7 within 1σ errors, with an average of 0.72 ± 0.06 (see Figs. 8 and 9). We note that $\beta = 0.7$ was the lowest allowed value during the fitting, this is discussed in Sect. 4.7.

4.5. Onset of clumping

We derive the onset of clumping for 39 sources and find a value of $v_{\rm cl,start} = 0.07^{0.10}_{0.07}\ v_\infty$, translating into $R_{\rm cl,start} = 1.02\ \pm^{0.07}_{0.02}\ R_\star$ on average. There is not much variation across the sample: two thirds of the stars have a value of $v_{\rm cl,start} < 0.1\ v_\infty$ or $R_{\rm cl,start} < 1.08\ R_\star$, the higher values that we derive have large error bars – within 2σ all sources are consistent with $v_{\rm cl,start} \leq 0.05\ v_\infty$. This is visible in Fig. 8.

4.6. Ionising flux

We derive H, He i and He ii ionising fluxes Q_0, Q_1, Q_2 for each star[15] based on the best fitting model (Table H.2). We estimate the errors on these values by computing, for one star (H35, spectral type O3 V), the ionising flux for each model in a full Kiwi-GA run; afterwards we apply an error analysis based on the χ^2

[15] Here, by convention, $Q_x = q_x 4\pi R_\star^2$, with q_x the ionising radiation (number of photons) per unit surface area per second and $x \in \{1, 2, 3\}$.