Extended results of Bloot et al. (2023)

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1 Results of the standard runs

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-29.1±0.0152	-29.9±0.0224
Mass (M_J)	$0.472\ ^{+0.0471}_{-0.0515}$	$0.47\ ^{+0.0466}_{-0.0476}$
Core mass fraction	$0.0724\ ^{+0.248}_{-0.0543}$	$0.091\ ^{+0.27}_{-0.0598}$
Core mass (M_{earth})	$11\ ^{+37}_{-8.2}$	$14\ ^{+40}_{-8.9}$
Y	$0.28\ ^{+0.01}_{-0.0095}$	$0.28\ ^{+0.0091}_{-0.0088}$
Z_{atm}	$0.00033\ ^{+0.0033}_{-0.0003}$	$0.0003\ ^{+0.0029}_{-0.00026}$
$\log_{10}(Z_{atm})$	$-3.5\ ^{+1}_{-1.1}$	$-3.5\ ^{+1}_{-0.88}$
Metal mass (M_{earth})	$12\ ^{+37}_{-8.7}$	$16\ ^{+42}_{-9.6}$
T_{eq} (K)	$1233\ ^{+63}_{-65}$	$1227\ ^{+65}_{-66}$
Internal luminosity (L_J)	$2.3\ ^{+0.908}_{-1.18}$	$2.39\ ^{+0.849}_{-1.12}$
m_{dilute}	-	$0.27\ ^{+0.38}_{-0.18}$
Z_{dilute}	-	$0.34\ ^{+0.41}_{-0.25}$
Radius (R_J)	$0.983\ ^{+0.0515}_{-0.16}$	$0.941\ ^{+0.0563}_{-0.128}$

Table 1: Fitting results for 51 Peg b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-28.6±0.0199	-30.6±0.1
Mass (M_J)	$0.523\ ^{+0.0194}_{-0.0183}$	$0.525\ ^{+0.0177}_{-0.0168}$
Core mass fraction	$0.0274\ ^{+0.067}_{-0.0203}$	$0.0441\ ^{+0.0738}_{-0.0278}$
Core mass (M_{earth})	$4.6\ ^{+11}_{-3.4}$	$7.4\ ^{+12}_{-4.7}$
Y	$0.27\ ^{+0.0093}_{-0.0091}$	$0.28\ ^{+0.0086}_{-0.0091}$
Z_{atm}	$0.0018\ ^{+0.0039}_{-0.0012}$	$0.0018\ ^{+0.0034}_{-0.0011}$
$\log_{10}(Z_{atm})$	$-2.7\ ^{+0.49}_{-0.46}$	$-2.8\ ^{+0.46}_{-0.41}$
Metal mass (M_{earth})	$5.3\ ^{+11}_{-3.6}$	$8.7\ ^{+13}_{-4.5}$
T_{eq} (K)	$1322\ ^{+14}_{-14}$	$1323\ ^{+13}_{-13}$
Internal luminosity (L_J)	$3.13\ ^{+0.639}_{-1.25}$	$2.99\ ^{+0.705}_{-1.07}$
m_{dilute}	-	$0.2\ ^{+0.38}_{-0.14}$
Z_{dilute}	-	$0.21\ ^{+0.43}_{-0.17}$
Radius (R_J)	$1.04\ ^{+0.023}_{-0.0607}$	$1.01\ ^{+0.0291}_{-0.0674}$

Table 2: Fitting results for HAT-P-1 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-22.9±0.0189	-24.6±0.0285
Mass (M_J)	$0.211\ ^{+0.0128}_{-0.0133}$	$0.21\ ^{+0.013}_{-0.0126}$
Core mass fraction	$0.136\ ^{+0.107}_{-0.0786}$	$0.115\ ^{+0.319}_{-0.0851}$
Core mass (M_{earth})	$9.1\ ^{+7.3}_{-5.3}$	$7.5\ ^{+22}_{-5.6}$
Y	$0.28\ ^{+0.0099}_{-0.011}$	$0.28\ ^{+0.01}_{-0.01}$
Z_{atm}	$0.00013\ ^{+0.003}_{-0.00012}$	$0.00018\ ^{+0.0048}_{-0.00017}$
$\log_{10}(Z_{atm})$	$-3.9\ ^{+1.4}_{-1.4}$	$-3.7\ ^{+1.4}_{-1.4}$
Metal mass (M_{earth})	$9.3\ ^{+7.5}_{-5.5}$	$9.8\ ^{+20}_{-5.4}$
T_{eq} (K)	$957.6\ ^{+19}_{-20}$	$961.3\ ^{+18}_{-18}$
Internal luminosity (L_J)	$1.49\ ^{+0.69}_{-0.704}$	$1.53\ ^{+0.658}_{-0.669}$
m_{dilute}	-	$0.44\ ^{+0.33}_{-0.29}$
Z_{dilute}	-	$0.35\ ^{+0.48}_{-0.26}$
Radius (R_J)	$0.937\ ^{+0.0464}_{-0.0692}$	$0.909\ ^{+0.0427}_{-0.0472}$

Table 3: Fitting results for HAT-P-12 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24.5±0.0409	-25.2±0.0742
Mass (M_J)	$0.175\ ^{+0.0363}_{-0.0316}$	$0.175\ ^{+0.0309}_{-0.0323}$
Core mass fraction	$0.0347\ ^{+0.0598}_{-0.0249}$	$0.0624\ ^{+0.505}_{-0.0476}$
Core mass (M_{earth})	$1.9\ ^{+3.4}_{-1.3}$	$3.2\ ^{+29}_{-2.4}$
Y	$0.27\ ^{+0.0095}_{-0.0096}$	$0.28\ ^{+0.0099}_{-0.0093}$
Z_{atm}	$0.0016\ ^{+0.022}_{-0.0015}$	$0.026\ ^{+0.1}_{-0.025}$
$\log_{10}(Z_{atm})$	$-2.8\ ^{+1.2}_{-1.1}$	$-1.6\ ^{+0.69}_{-1.4}$
Metal mass (M_{earth})	$2.4\ ^{+3.7}_{-1.7}$	$5.7\ ^{+27}_{-3.3}$
T_{eq} (K)	$840.2\ ^{+14}_{-14}$	$841.5\ ^{+14}_{-13}$
Internal luminosity (L_J)	$0.0632\ ^{+0.0199}_{-0.0301}$	$0.0595\ ^{+0.0238}_{-0.0382}$
m_{dilute}	-	$0.51\ ^{+0.34}_{-0.36}$
Z_{dilute}	-	$0.12\ ^{+0.54}_{-0.09}$
Radius (R_J)	$0.892\ ^{+0.0227}_{-0.0416}$	$0.909\ ^{+0.0271}_{-0.000482}$

Table 4: Fitting results for HAT-P-18 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-22.7±0.0168	-22.7±0.0206
Mass (M_J)	$0.59\ ^{+0.0182}_{-0.018}$	$0.59\ ^{+0.0186}_{-0.0164}$
Core mass fraction	$0.386\ ^{+0.105}_{-0.102}$	$0.329\ ^{+0.136}_{-0.19}$
Core mass (M_{earth})	$72\ ^{+20}_{-19}$	$61\ ^{+26}_{-35}$
Y	$0.28\ ^{+0.0098}_{-0.01}$	$0.28\ ^{+0.0098}_{-0.01}$
Z_{atm}	1.2e-07 $^{+5e-05}_{-1.2e-07}$	1.5e-07 $^{+5.7e-05}_{-1.5e-07}$
$\log_{10}(Z_{atm})$	-6.9 $^{+2.6}_{-2.5}$	-6.8 $^{+2.6}_{-2.5}$
Metal mass (M_{earth})	$72\ ^{+21}_{-18}$	$68\ ^{+23}_{-25}$
T_{eq} (K)	$1126\ ^{+42}_{-45}$	$1126\ ^{+43}_{-40}$
Internal luminosity (L_J)	$11.6\ ^{+9.73}_{-8.03}$	$13.9\ ^{+7.56}_{-8.72}$
m_{dilute}	-	$0.46\ ^{+0.28}_{-0.29}$
Z_{dilute}	-	$0.47\ ^{+0.34}_{-0.31}$
Radius (R_J)	$0.826\ ^{+0.0592}_{-0.0642}$	$0.82\ ^{+0.0505}_{-0.065}$

Table 5: Fitting results for HAT-P-3 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-27.5±0.0161	-28.4±0.0202
Mass (M_J)	$0.758\ ^{+0.127}_{-0.129}$	$0.752\ ^{+0.118}_{-0.117}$
Core mass fraction	$0.0895\ ^{+0.294}_{-0.0654}$	$0.102\ ^{+0.262}_{-0.0738}$
Core mass (M_{earth})	$21\ ^{+68}_{-16}$	$24\ ^{+62}_{-17}$
Y	$0.28\ ^{+0.0096}_{-0.01}$	$0.28\ ^{+0.0093}_{-0.0096}$
Z_{atm}	$0.0014\ ^{+0.011}_{-0.0012}$	$0.0016\ ^{+0.013}_{-0.0014}$
$\log_{10}(Z_{atm})$	$-2.9\ ^{+0.97}_{-0.92}$	$-2.8\ ^{+0.95}_{-0.89}$
Metal mass (M_{earth})	$24\ ^{+69}_{-17}$	$30\ ^{+66}_{-19}$
T_{eq} (K)	$1786\ ^{+26}_{-25}$	$1787\ ^{+23}_{-25}$
Internal luminosity (L_J)	$2.03\ ^{+1.01}_{-1.08}$	$2.22\ ^{+0.812}_{-1.13}$
m_{dilute}	-	$0.3\ ^{+0.37}_{-0.2}$
Z_{dilute}	-	$0.31\ ^{+0.39}_{-0.21}$
Radius (R_J)	$1.01\ ^{+0.0548}_{-0.19}$	$0.971\ ^{+0.0692}_{-0.179}$

Table 6: Fitting results for HAT-P-32 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-22.4±0.0183	-23.5±0.0233
Mass (M_J)	$0.267\ ^{+0.019}_{-0.0184}$	$0.268\ ^{+0.0193}_{-0.0185}$
Core mass fraction	$0.233\ ^{+0.115}_{-0.0981}$	$0.142\ ^{+0.169}_{-0.0947}$
Core mass (M_{earth})	$19\ ^{+10}_{-7.8}$	$12\ ^{+14}_{-7.9}$
Y	$0.28\ ^{+0.0097}_{-0.01}$	$0.28\ ^{+0.0092}_{-0.0091}$
Z_{atm}	4.7e-05 $^{+0.0061}_{-4.7e-05}$	7.7e-05 $^{+0.0084}_{-7.7e-05}$
$\log_{10}(Z_{atm})$	$-4.3\ ^{+2.1}_{-2}$	$-4.1\ ^{+2}_{-2.1}$
Metal mass (M_{earth})	$20\ ^{+11}_{-8}$	$16\ ^{+14}_{-7.6}$
T_{eq} (K)	$1081\ ^{+53}_{-54}$	$1080\ ^{+50}_{-53}$
Internal luminosity (L_J)	$0.334\ ^{+0.0237}_{-0.0242}$	$0.334\ ^{+0.0228}_{-0.0243}$
m_{dilute}	-	$0.51\ ^{+0.29}_{-0.29}$
Z_{dilute}	-	$0.43\ ^{+0.38}_{-0.29}$
Radius (R_J)	$0.821\ ^{+0.0573}_{-0.0674}$	$0.817\ ^{+0.0673}_{-0.0674}$

Table 7: Fitting results for HAT-P-38 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-26.3±0.0139	-27±0.0217
Mass (M_J)	$0.792\ ^{+0.099}_{-0.1}$	$0.806\ ^{+0.0923}_{-0.0951}$
Core mass fraction	$0.113\ ^{+0.311}_{-0.0823}$	$0.106\ ^{+0.261}_{-0.0799}$
Core mass (M_{earth})	$28\ ^{+77}_{-21}$	$27\ ^{+66}_{-20}$
Y	$0.28\ ^{+0.0098}_{-0.011}$	$0.28\ ^{+0.0087}_{-0.01}$
Z_{atm}	$0.0021\ ^{+0.021}_{-0.0019}$	$0.0013\ ^{+0.015}_{-0.0012}$
$\log_{10}(Z_{atm})$	$-2.7\ ^{+1.1}_{-1.1}$	$-2.9\ ^{+1.1}_{-0.96}$
Metal mass (M_{earth})	$34\ ^{+74}_{-24}$	$34\ ^{+72}_{-23}$
T_{eq} (K)	$1941\ ^{+39}_{-35}$	$1943\ ^{+35}_{-37}$
Internal luminosity (L_J)	$4.55\ ^{+1.92}_{-2.53}$	$4.65\ ^{+1.85}_{-2.36}$
m_{dilute}	-	$0.31\ ^{+0.39}_{-0.21}$
Z_{dilute}	-	$0.33\ ^{+0.4}_{-0.23}$
Radius (R_J)	$1.03\ ^{+0.0763}_{-0.207}$	$1\ ^{+0.0778}_{-0.199}$

Table 8: Fitting results for HAT-P-41 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{\rm ev})$	-22.7±0.0174	-23.1±0.02
Mass ($M_{\rm J}$)	$0.357\ ^{+0.0124}_{-0.0124}$	$0.357\ ^{+0.0117}_{-0.0118}$
Core mass fraction	$0.509\ ^{+0.108}_{-0.121}$	$0.402\ ^{+0.155}_{-0.227}$
Core mass ($M_{\rm earth}$)	$58\ ^{+13}_{-14}$	$45\ ^{+18}_{-25}$
Y	$0.28\ ^{+0.01}_{-0.0097}$	$0.28\ ^{+0.0092}_{-0.0095}$
$Z_{\rm atm}$	1.2e-06 $^{+0.00048}_{-1.2e-06}$	2.1e-06 $^{+0.00079}_{-2e-06}$
$\log_{10}(Z_{\rm atm})$	-5.9 $^{+2.6}_{-2.8}$	-5.7 $^{+2.6}_{-3}$
Metal mass ($M_{\rm earth}$)	$58\ ^{+13}_{-14}$	$53\ ^{+13}_{-18}$
T_{eq} (K)	$1627\ ^{+53}_{-55}$	$1629\ ^{+56}_{-51}$
Internal luminosity ($L_{\rm J}$)	$1.58\ ^{+0.9}_{-0.855}$	$1.59\ ^{+0.852}_{-0.866}$
m_{dilute}	-	$0.61\ ^{+0.22}_{-0.24}$
Z_{dilute}	-	$0.61\ ^{+0.26}_{-0.33}$
Radius ($R_{\rm J}$)	$0.717\ ^{+0.0718}_{-0.0702}$	$0.713\ ^{+0.0604}_{-0.064}$

Table 9: Fitting results for HD 149026 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{\rm ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.4±0.0173	-24.2±0.0462
Mass (M_J)	$1.14\ ^{+0.025}_{-0.0244}$	$1.14\ ^{+0.0259}_{-0.0226}$
Core mass fraction	$0.118\ ^{+0.107}_{-0.0707}$	$0.104\ ^{+0.116}_{-0.0658}$
Core mass (M_{earth})	$42\ ^{+39}_{-26}$	$38\ ^{+42}_{-24}$
Y	$0.28\ ^{+0.01}_{-0.0096}$	$0.28\ ^{+0.0095}_{-0.0094}$
Z_{atm}	8.6e-06 $^{+1.3e-05}_{-4.8e-06}$	8.7e-06 $^{+1.1e-05}_{-4.9e-06}$
$\log_{10}(Z_{atm})$	$-5.1\ ^{+0.4}_{-0.36}$	$-5.1\ ^{+0.35}_{-0.36}$
Metal mass (M_{earth})	$42\ ^{+39}_{-26}$	$44\ ^{+43}_{-23}$
T_{eq} (K)	$1200\ ^{+12}_{-11}$	$1202\ ^{+11}_{-11}$
Internal luminosity (L_J)	$142\ ^{+70.5}_{-83.9}$	$153\ ^{+67.9}_{-85.1}$
m_{dilute}	-	$0.27\ ^{+0.3}_{-0.18}$
Z_{dilute}	-	$0.33\ ^{+0.4}_{-0.23}$
Radius (R_J)	$1.11\ ^{+0.0606}_{-0.0916}$	$1.09\ ^{+0.0578}_{-0.105}$

Table 10: Fitting results for HD 189733 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-30.2±0.0171	-32±0.0368
Mass (M_J)	$0.689\ ^{+0.0169}_{-0.0157}$	$0.69\ ^{+0.0155}_{-0.0153}$
Core mass fraction	$0.0286\ ^{+0.0603}_{-0.0208}$	$0.0291\ ^{+0.0546}_{-0.021}$
Core mass (M_{earth})	$6.3\ ^{+13}_{-4.6}$	$6.3\ ^{+12}_{-4.6}$
Y	$0.28\ ^{+0.0092}_{-0.0093}$	$0.27\ ^{+0.0087}_{-0.0083}$
Z_{atm}	2.1e-05 $^{+2.2e-05}_{-1.1e-05}$	2.4e-05 $^{+2.4e-05}_{-1.2e-05}$
$\log_{10}(Z_{atm})$	-4.7 $^{+0.32}_{-0.35}$	-4.6 $^{+0.3}_{-0.31}$
Metal mass (M_{earth})	$6.3\ ^{+13}_{-4.6}$	$7.4\ ^{+13}_{-4.9}$
T_{eq} (K)	$1450\ ^{+11}_{-11}$	$1449\ ^{+11}_{-10}$
Internal luminosity (L_J)	$3.83\ ^{+0.895}_{-1.55}$	$3.67\ ^{+0.965}_{-1.33}$
m_{dilute}	-	$0.16\ ^{+0.23}_{-0.11}$
Z_{dilute}	-	$0.19\ ^{+0.32}_{-0.14}$
Radius (R_J)	$1.05\ ^{+0.0197}_{-0.0525}$	$1.04\ ^{+0.0263}_{-0.058}$

Table 11: Fitting results for HD 209458 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{\rm ev})$	-25.4±0.0163	-27.3±0.0219
Mass ($M_{\rm J}$)	$0.192\ ^{+0.0182}_{-0.0198}$	$0.192\ ^{+0.0182}_{-0.0172}$
Core mass fraction	$0.0569\ ^{+0.139}_{-0.041}$	$0.064\ ^{+0.158}_{-0.0458}$
Core mass ($M_{\rm earth}$)	$3.4\ ^{+8.8}_{-2.5}$	$3.8\ ^{+10}_{-2.7}$
Y	$0.28\ ^{+0.01}_{-0.0099}$	$0.28\ ^{+0.0095}_{-0.0091}$
$Z_{\rm atm}$	2.5e-05 $^{+0.00043}_{-2.4e-05}$	2e-05 $^{+0.00038}_{-1.9e-05}$
$\log_{10}(Z_{\rm atm})$	$-4.6\ ^{+1.3}_{-1.4}$	$-4.7\ ^{+1.3}_{-1.3}$
Metal mass ($M_{\rm earth}$)	$3.5\ ^{+8.7}_{-2.5}$	$5.7\ ^{+10}_{-3.1}$
T_{eq} (K)	$1717\ ^{+46}_{-45}$	$1714\ ^{+44}_{-45}$
Internal luminosity ($L_{\rm J}$)	$0.742\ ^{+0.197}_{-0.266}$	$0.743\ ^{+0.185}_{-0.238}$
m_{dilute}	-	$0.58\ ^{+0.28}_{-0.35}$
Z_{dilute}	-	$0.14\ ^{+0.46}_{-0.1}$
Radius ($R_{\rm J}$)	$1.05\ ^{+0.0505}_{-0.123}$	$0.993\ ^{+0.0643}_{-0.0846}$

Table 12: Fitting results for KELT-11 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{\rm ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-28.5±0.171	-30.2±0.2
Mass (M_J)	$0.499\ ^{+0.00355}_{-0.00369}$	$0.501\ ^{+0.00348}_{-0.00308}$
Core mass fraction	$0.019\ ^{+0.0328}_{-0.0141}$	$0.0562\ ^{+0.0404}_{-0.0342}$
Core mass (M_{earth})	$3\ ^{+5.2}_{-2.2}$	$9\ ^{+6.4}_{-5.4}$
Y	$0.27\ ^{+0.0091}_{-0.0089}$	$0.28\ ^{+0.0092}_{-0.0096}$
Z_{atm}	$0.02\ ^{+0.086}_{-0.02}$	$0.12\ ^{+0.14}_{-0.065}$
$\log_{10}(Z_{atm})$	$-1.7\ ^{+0.73}_{-6.2}$	$-0.93\ ^{+0.35}_{-0.35}$
Metal mass (M_{earth})	$6.2\ ^{+17}_{-5.1}$	$19\ ^{+14}_{-9}$
T_{eq} (K)	$1568\ ^{+36}_{-39}$	$1558\ ^{+32}_{-29}$
Internal luminosity (L_J)	$51.2\ ^{+6.28}_{-11.3}$	$45.6\ ^{+9.51}_{-13.1}$
m_{dilute}	-	$0.2\ ^{+0.28}_{-0.13}$
Z_{dilute}	-	$0.26\ ^{+0.36}_{-0.18}$
Radius (R_J)	$1.28\ ^{+0.103}_{-0.0373}$	$1.37\ ^{+0.0447}_{-0.0671}$

Table 13: Fitting results for WASP-101 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-36.3±0.0899	-35.6±0.458
Mass (M_J)	$1.46\ ^{+0.0805}_{-0.0815}$	$1.48\ ^{+0.0594}_{-0.0608}$
Core mass fraction	$0.0105\ ^{+0.0151}_{-0.0075}$	$0.000386\ ^{+0.00994}_{-0.000166}$
Core mass (M_{earth})	$4.8\ ^{+7}_{-3.4}$	$0.18\ ^{+4.7}_{-0.074}$
Y	$0.27\ ^{+0.0093}_{-0.0091}$	$0.28\ ^{+0.0085}_{-0.0084}$
Z_{atm}	$0.045\ ^{+0.024}_{-0.018}$	$0.037\ ^{+0.031}_{-0.016}$
$\log_{10}(Z_{atm})$	$-1.3\ ^{+0.19}_{-0.23}$	$-1.4\ ^{+0.27}_{-0.24}$
Metal mass (M_{earth})	$27\ ^{+14}_{-10}$	$9.9\ ^{+12}_{-4.4}$
T_{eq} (K)	$2539\ ^{+44}_{-48}$	$2523\ ^{+37}_{-33}$
Internal luminosity (L_J)	$11.1\ ^{+1.04}_{-2.04}$	$10.2\ ^{+1.41}_{-1.6}$
m_{dilute}	-	$0.12\ ^{+0.16}_{-0.08}$
Z_{dilute}	-	$0.11\ ^{+0.15}_{-0.057}$
Radius (R_J)	$1.27\ ^{+0.0181}_{-0.0333}$	$1.52\ ^{+0.0511}_{-0.257}$

Table 14: Fitting results for WASP-103 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the default homogeneous and inhomogeneous runs, respectively. The columns labelled "Homogeneous Y" and "Inhomogeneous Y" contain the results of the runs of the homogeneous and the inhomogeneous model, with the added helium fraction constraint. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the inhomogeneous region is located and Z_{dilute} is the inhomogeneous central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.1±0.0256	-25.2±0.0306
Mass (M_J)	$0.12\ ^{+0.00941}_{-0.00904}$	$0.122\ ^{+0.00905}_{-0.00977}$
Core mass fraction	$0.116\ ^{+0.0626}_{-0.0649}$	$0.0738\ ^{+0.0974}_{-0.0462}$
Core mass (M_{earth})	$4.5\ ^{+2.3}_{-2.5}$	$2.8\ ^{+4}_{-1.8}$
Y	$0.28\ ^{+0.0086}_{-0.009}$	$0.28\ ^{+0.0088}_{-0.0092}$
Z_{atm}	$0.024\ ^{+0.03}_{-0.014}$	$0.027\ ^{+0.046}_{-0.016}$
$\log_{10}(Z_{atm})$	$-1.6\ ^{+0.35}_{-0.36}$	$-1.6\ ^{+0.43}_{-0.4}$
Metal mass (M_{earth})	$5.4\ ^{+3}_{-2.7}$	$5\ ^{+4.2}_{-2.4}$
T_{eq} (K)	$765.1\ ^{+60}_{-57}$	$768.6\ ^{+52}_{-57}$
Internal luminosity (L_J)	$0.197\ ^{+0.102}_{-0.102}$	$0.211\ ^{+0.093}_{-0.108}$
m_{dilute}	-	$0.61\ ^{+0.27}_{-0.31}$
Z_{dilute}	-	$0.17\ ^{+0.24}_{-0.13}$
Radius (R_J)	$0.937\ ^{+0.0183}_{-0.0229}$	$0.929\ ^{+0.0235}_{-0.0203}$

Table 15: Fitting results for WASP-107 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24±0.0179	-25.4±0.0347
Mass (M_J)	$0.275\ ^{+0.00883}_{-0.00858}$	$0.275\ ^{+0.0087}_{-0.00787}$
Core mass fraction	$0.0584\ ^{+0.105}_{-0.0424}$	$0.0662\ ^{+0.253}_{-0.0479}$
Core mass (M_{earth})	$5\ ^{+9.4}_{-3.7}$	$5.8\ ^{+22}_{-4.2}$
Y	$0.27\ ^{+0.0098}_{-0.0089}$	$0.27\ ^{+0.01}_{-0.0089}$
Z_{atm}	$0.00013\ ^{+0.0037}_{-0.00013}$	$0.00026\ ^{+0.017}_{-0.00025}$
$\log_{10}(Z_{atm})$	$-3.9\ ^{+1.5}_{-1.4}$	$-3.6\ ^{+1.8}_{-1.4}$
Metal mass (M_{earth})	$5.5\ ^{+9.6}_{-3.9}$	$7.9\ ^{+20}_{-4.6}$
T_{eq} (K)	$1223\ ^{+38}_{-37}$	$1225\ ^{+34}_{-34}$
Internal luminosity (L_J)	$0.586\ ^{+0.147}_{-0.179}$	$0.607\ ^{+0.13}_{-0.177}$
m_{dilute}	-	$0.42\ ^{+0.32}_{-0.27}$
Z_{dilute}	-	$0.17\ ^{+0.55}_{-0.13}$
Radius (R_J)	$0.955\ ^{+0.0301}_{-0.0703}$	$0.921\ ^{+0.0406}_{-0.0124}$

Table 16: Fitting results for WASP-117 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-27.3±0.015	-28.2±0.0185
Mass (M_J)	$1.47\ ^{+0.0729}_{-0.068}$	$1.46\ ^{+0.0706}_{-0.0637}$
Core mass fraction	$0.0817\ ^{+0.23}_{-0.0599}$	$0.118\ ^{+0.27}_{-0.0864}$
Core mass (M_{earth})	$38\ ^{+1.1e+02}_{-28}$	$54\ ^{+1.2e+02}_{-40}$
Y	$0.28\ ^{+0.0096}_{-0.0093}$	$0.28\ ^{+0.0094}_{-0.0084}$
Z_{atm}	$0.00069\ ^{+0.0023}_{-0.00054}$	$0.00079\ ^{+0.0024}_{-0.00061}$
$\log_{10}(Z_{atm})$	$-3.2\ ^{+0.63}_{-0.67}$	$-3.1\ ^{+0.61}_{-0.63}$
Metal mass (M_{earth})	$39\ ^{+1.1e+02}_{-28}$	$66\ ^{+1.3e+02}_{-44}$
T_{eq} (K)	$2554\ ^{+82}_{-79}$	$2553\ ^{+71}_{-75}$
Internal luminosity (L_J)	$29.2\ ^{+10.9}_{-14.8}$	$26.1\ ^{+12.5}_{-14.6}$
m_{dilute}	-	$0.33\ ^{+0.35}_{-0.23}$
Z_{dilute}	-	$0.31\ ^{+0.38}_{-0.21}$
Radius (R_J)	$1.17\ ^{+0.0732}_{-0.203}$	$1.09\ ^{+0.0973}_{-0.191}$

Table 17: Fitting results for WASP-12 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-27.3±0.0142	-28.2±0.0209
Mass (M_J)	$1.18^{+0.0608}_{-0.0616}$	$1.18^{+0.0639}_{-0.0591}$
Core mass fraction	$0.0819^{+0.251}_{-0.0616}$	$0.114^{+0.25}_{-0.0803}$
Core mass (M_{earth})	31^{+96}_{-23}	43^{+91}_{-30}
Y	$0.28^{+0.0096}_{-0.0097}$	$0.28^{+0.0098}_{-0.0095}$
Z_{atm}	$0.0011^{+0.0089}_{-0.00096}$	$0.00087^{+0.0058}_{-0.00074}$
$\log_{10}(Z_{atm})$	$-3^{+0.96}_{-0.88}$	$-3.1^{+0.88}_{-0.82}$
Metal mass (M_{earth})	35^{+94}_{-26}	52^{+98}_{-34}
T_{eq} (K)	2360^{+50}_{-54}	2361^{+48}_{-46}
Internal luminosity (L_J)	$16.4^{+6.81}_{-9.03}$	$16.8^{+6.65}_{-8.77}$
m_{dilute}	-	$0.31^{+0.41}_{-0.22}$
Z_{dilute}	-	$0.3^{+0.41}_{-0.22}$
Radius (R_J)	$1.14^{+0.0672}_{-0.208}$	$1.06^{+0.092}_{-0.166}$

Table 18: Fitting results for WASP-121 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-35±0.143	-36±0.874
Mass (M_J)	$0.113\ ^{+0.00904}_{-0.00693}$	$0.113\ ^{+0.00753}_{-0.00854}$
Core mass fraction	$0.0117\ ^{+0.0131}_{-0.0085}$	$0.00812\ ^{+0.0106}_{-0.00579}$
Core mass (M_{earth})	$0.43\ ^{+0.45}_{-0.31}$	$0.29\ ^{+0.38}_{-0.21}$
Y	$0.27\ ^{+0.0084}_{-0.0088}$	$0.27\ ^{+0.0092}_{-0.0092}$
Z_{atm}	$0.083\ ^{+0.049}_{-0.031}$	$0.077\ ^{+0.044}_{-0.031}$
$\log_{10}(Z_{atm})$	$-1.1\ ^{+0.2}_{-0.2}$	$-1.1\ ^{+0.2}_{-0.23}$
Metal mass (M_{earth})	$3.5\ ^{+1.7}_{-1.2}$	$2.4\ ^{+1}_{-0.85}$
T_{eq} (K)	$1419\ ^{+23}_{-25}$	$1414\ ^{+25}_{-28}$
Internal luminosity (L_J)	$0.268\ ^{+0.0217}_{-0.042}$	$0.27\ ^{+0.0196}_{-0.0341}$
m_{dilute}	-	$0.74\ ^{+0.15}_{-0.19}$
Z_{dilute}	-	$0.14\ ^{+0.071}_{-0.057}$
Radius (R_J)	$1.31\ ^{+0.0476}_{-0.0484}$	$1.3\ ^{+0.0482}_{-0.045}$

Table 19: Fitting results for WASP-127 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-29.1±0.0162	-30±0.0234
Mass (M_J)	$0.485\ ^{+0.0307}_{-0.0305}$	$0.486\ ^{+0.0283}_{-0.0288}$
Core mass fraction	$0.0843\ ^{+0.214}_{-0.0616}$	$0.095\ ^{+0.209}_{-0.0587}$
Core mass (M_{earth})	$13\ ^{+33}_{-9.3}$	$15\ ^{+32}_{-9}$
Y	$0.28\ ^{+0.0096}_{-0.0092}$	$0.28\ ^{+0.0098}_{-0.0094}$
Z_{atm}	9.2e-05 $^{+0.00032}_{-7.2e-05}$	8.4e-05 $^{+0.00028}_{-6.4e-05}$
$\log_{10}(Z_{atm})$	$-4\ ^{+0.66}_{-0.66}$	$-4.1\ ^{+0.63}_{-0.63}$
Metal mass (M_{earth})	$13\ ^{+33}_{-9.3}$	$17\ ^{+33}_{-8.9}$
T_{eq} (K)	$1772\ ^{+34}_{-33}$	$1769\ ^{+34}_{-32}$
Internal luminosity (L_J)	$9.37\ ^{+3.83}_{-4.95}$	$10.5\ ^{+3.03}_{-5.05}$
m_{dilute}	-	$0.27\ ^{+0.41}_{-0.18}$
Z_{dilute}	-	$0.36\ ^{+0.4}_{-0.26}$
Radius (R_J)	$1.08\ ^{+0.0647}_{-0.171}$	$1.04\ ^{+0.0635}_{-0.146}$

Table 20: Fitting results for WASP-17 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-30.1±0.042	-32.1±0.0876
Mass (M_J)	$1.14^{+0.0278}_{-0.0265}$	$1.14^{+0.027}_{-0.0271}$
Core mass fraction	$0.0198^{+0.0527}_{-0.0153}$	$0.0289^{+0.0576}_{-0.0201}$
Core mass (M_{earth})	$7^{+19}_{-5.4}$	$10^{+21}_{-7.3}$
Y	$0.27^{+0.0096}_{-0.0098}$	$0.27^{+0.0095}_{-0.0091}$
Z_{atm}	$0.00011^{+0.0011}_{-9.8e-05}$	$0.00013^{+0.0011}_{-0.00012}$
$\log_{10}(Z_{atm})$	$-4^{+1}_{-0.96}$	$-3.9^{+0.99}_{-0.95}$
Metal mass (M_{earth})	$7.5^{+20}_{-5.6}$	$12^{+23}_{-8.1}$
T_{eq} (K)	2102^{+39}_{-36}	2097^{+35}_{-33}
Internal luminosity (L_J)	$2.01^{+0.425}_{-0.845}$	$1.95^{+0.442}_{-0.695}$
m_{dilute}	-	$0.13^{+0.3}_{-0.094}$
Z_{dilute}	-	$0.2^{+0.36}_{-0.16}$
Radius (R_J)	$1.09^{+0.0195}_{-0.053}$	$1.06^{+0.0295}_{-0.0632}$

Table 21: Fitting results for WASP-19 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{\rm ev})$	-22.7±0.0167	-23.7±0.0244
Mass ($M_{\rm J}$)	$0.242\ ^{+0.0188}_{-0.0187}$	$0.246\ ^{+0.0186}_{-0.0171}$
Core mass fraction	$0.252\ ^{+0.0639}_{-0.0636}$	$0.137\ ^{+0.0877}_{-0.0886}$
Core mass ($M_{\rm earth}$)	$19\ ^{+5.5}_{-5.2}$	$10\ ^{+7.3}_{-6.9}$
Y	$0.28\ ^{+0.0094}_{-0.0098}$	$0.28\ ^{+0.0088}_{-0.0091}$
$Z_{\rm atm}$	9.1e-09 $^{+1.8e-06}_{-9e-09}$	1.6e-08 $^{+3.3e-06}_{-1.6e-08}$
$\log_{10}(Z_{\rm atm})$	-8 $^{+2.3}_{-2.1}$	-7.8 $^{+2.3}_{-2.1}$
Metal mass ($M_{\rm earth}$)	$19\ ^{+5.5}_{-5.1}$	$14\ ^{+6}_{-5.4}$
T_{eq} (K)	$973.2\ ^{+33}_{-32}$	$968.3\ ^{+33}_{-27}$
Internal luminosity ($L_{\rm J}$)	$0.102\ ^{+0.0652}_{-0.0652}$	$0.101\ ^{+0.0584}_{-0.0563}$
m_{dilute}	-	$0.55\ ^{+0.24}_{-0.24}$
Z_{dilute}	-	$0.36\ ^{+0.37}_{-0.24}$
Radius ($R_{\rm J}$)	$0.773\ ^{+0.0309}_{-0.0343}$	$0.774\ ^{+0.0265}_{-0.0315}$

Table 22: Fitting results for WASP-29 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{\rm ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-45.2±0.267	-35.3±0.142
Mass (M_J)	$0.441\ ^{+0.0303}_{-0.0258}$	$0.459\ ^{+0.0239}_{-0.0212}$
Core mass fraction	$0.00781\ ^{+0.0106}_{-0.00546}$	$0.00649\ ^{+0.00355}_{-0.00278}$
Core mass (M_{earth})	$1.1\ ^{+1.5}_{-0.75}$	$0.95\ ^{+0.48}_{-0.41}$
Y	$0.27\ ^{+0.0092}_{-0.0088}$	$0.28\ ^{+0.0078}_{-0.0076}$
Z_{atm}	$0.075\ ^{+0.036}_{-0.028}$	$0.11\ ^{+0.036}_{-0.027}$
$\log_{10}(Z_{atm})$	$-1.1\ ^{+0.17}_{-0.2}$	$-0.95\ ^{+0.12}_{-0.12}$
Metal mass (M_{earth})	$12\ ^{+5}_{-4}$	$9.7\ ^{+2.4}_{-1.9}$
T_{eq} (K)	$1590\ ^{+30}_{-27}$	$1576\ ^{+24}_{-24}$
Internal luminosity (L_J)	$5.39\ ^{+0.258}_{-0.542}$	$4.41\ ^{+0.799}_{-1.36}$
m_{dilute}	-	$0.27\ ^{+0.039}_{-0.038}$
Z_{dilute}	-	$0.2\ ^{+0.061}_{-0.049}$
Radius (R_J)	$1.21\ ^{+0.0194}_{-0.0302}$	$1.55\ ^{+0.0601}_{-0.0538}$

Table 23: Fitting results for WASP-31 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-33±0.0481	-33.6±0.299
Mass (M_J)	$1.53^{+0.238}_{-0.218}$	$1.76^{+0.24}_{-0.234}$
Core mass fraction	$0.0173^{+0.0233}_{-0.0118}$	$0.0169^{+0.0234}_{-0.0119}$
Core mass (M_{earth})	$8.6^{+9.7}_{-5.9}$	$9.6^{+11}_{-6.6}$
Y	$0.27^{+0.0089}_{-0.0085}$	$0.27^{+0.0088}_{-0.0078}$
Z_{atm}	$0.093^{+0.049}_{-0.035}$	$0.17^{+0.099}_{-0.065}$
$\log_{10}(Z_{atm})$	$-1^{+0.18}_{-0.2}$	$-0.78^{+0.2}_{-0.21}$
Metal mass (M_{earth})	56^{+25}_{-20}	60^{+31}_{-21}
T_{eq} (K)	2805^{+36}_{-35}	2816^{+29}_{-32}
Internal luminosity (L_J)	$104^{+7.93}_{-13.7}$	$102^{+9.52}_{-15.1}$
m_{dilute}	-	$0.15^{+0.46}_{-0.11}$
Z_{dilute}	-	$0.3^{+0.26}_{-0.13}$
Radius (R_J)	$1.6^{+0.0127}_{-0.0209}$	$1.6^{+0.013}_{-0.0204}$

Table 24: Fitting results for WASP-33 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-31.3±0.114	-35.7±0.128
Mass (M_J)	$0.221\ ^{+0.0339}_{-0.0257}$	$0.226\ ^{+0.0343}_{-0.0274}$
Core mass fraction	$0.0122\ ^{+0.0158}_{-0.00867}$	$0.0125\ ^{+0.0142}_{-0.00861}$
Core mass (M_{earth})	$0.88\ ^{+1.1}_{-0.62}$	$0.9\ ^{+1}_{-0.61}$
Y	$0.27\ ^{+0.009}_{-0.0088}$	$0.27\ ^{+0.0084}_{-0.0082}$
Z_{atm}	$0.048\ ^{+0.0085}_{-0.0094}$	$0.044\ ^{+0.009}_{-0.0069}$
$\log_{10}(Z_{atm})$	$-1.3\ ^{+0.07}_{-0.094}$	$-1.4\ ^{+0.08}_{-0.073}$
Metal mass (M_{earth})	$4.3\ ^{+1.2}_{-0.98}$	$3.1\ ^{+1.2}_{-0.87}$
T_{eq} (K)	$1037\ ^{+23}_{-23}$	$1039\ ^{+20}_{-23}$
Internal luminosity (L_J)	$2.01\ ^{+0.142}_{-0.232}$	$1.99\ ^{+0.147}_{-0.239}$
m_{dilute}	-	$0.67\ ^{+0.2}_{-0.18}$
Z_{dilute}	-	$0.072\ ^{+0.028}_{-0.019}$
Radius (R_J)	$1.16\ ^{+0.0348}_{-0.0357}$	$1.14\ ^{+0.0366}_{-0.0376}$

Table 25: Fitting results for WASP-39 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-22.9±0.0217	-23.6±0.0326
Mass (M_J)	$2.05\ ^{+0.051}_{-0.0491}$	$2.06\ ^{+0.0519}_{-0.0473}$
Core mass fraction	$0.265\ ^{+0.0447}_{-0.0736}$	$0.226\ ^{+0.0647}_{-0.0997}$
Core mass (M_{earth})	1.7e+02 $^{+30}_{-48}$	1.5e+02 $^{+42}_{-66}$
Y	$0.28\ ^{+0.0099}_{-0.009}$	$0.28\ ^{+0.0096}_{-0.0096}$
Z_{atm}	1.5e-05 $^{+0.0013}_{-1.5e-05}$	4.1e-05 $^{+0.0015}_{-4e-05}$
$\log_{10}(Z_{atm})$	-4.8 $^{+1.9}_{-2}$	-4.4 $^{+1.6}_{-1.9}$
Metal mass (M_{earth})	1.7e+02 $^{+30}_{-47}$	1.6e+02 $^{+35}_{-51}$
T_{eq} (K)	1444 $^{+38}_{-38}$	1449 $^{+33}_{-37}$
Internal luminosity (L_J)	391 $^{+245}_{-272}$	428 $^{+222}_{-239}$
m_{dilute}	-	$0.32\ ^{+0.35}_{-0.2}$
Z_{dilute}	-	$0.35\ ^{+0.4}_{-0.24}$
Radius (R_J)	$1.03\ ^{+0.0213}_{-0.0195}$	$1.03\ ^{+0.0201}_{-0.0231}$

Table 26: Fitting results for WASP-43 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-28.9±0.0665	-33±0.34
Mass (M_J)	$0.452\ ^{+0.0178}_{-0.0174}$	$0.45\ ^{+0.0187}_{-0.0174}$
Core mass fraction	$0.00872\ ^{+0.0154}_{-0.00636}$	$0.00777\ ^{+0.0115}_{-0.00557}$
Core mass (M_{earth})	$1.2\ ^{+2.2}_{-0.9}$	$1.1\ ^{+1.7}_{-0.8}$
Y	$0.27\ ^{+0.0098}_{-0.01}$	$0.27\ ^{+0.0082}_{-0.0082}$
Z_{atm}	9.2e-05 $^{+0.001}_{-7.8e-05}$	7.9e-05 $^{+0.00042}_{-6.6e-05}$
$\log_{10}(Z_{atm})$	$-4\ ^{+1.1}_{-0.81}$	$-4.1\ ^{+0.8}_{-0.79}$
Metal mass (M_{earth})	$1.4\ ^{+2.7}_{-0.98}$	$1.8\ ^{+2}_{-1}$
T_{eq} (K)	$1329\ ^{+29}_{-33}$	$1331\ ^{+29}_{-31}$
Internal luminosity (L_J)	$30.8\ ^{+2.03}_{-4.25}$	$30.8\ ^{+1.9}_{-3.59}$
m_{dilute}	-	$0.66\ ^{+0.22}_{-0.19}$
Z_{dilute}	-	$0.015\ ^{+0.024}_{-0.011}$
Radius (R_J)	$1.2\ ^{+0.0147}_{-0.0215}$	$1.19\ ^{+0.0156}_{-0.0252}$

Table 27: Fitting results for WASP-52 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-33.8±0.0279	-36.1±0.501
Mass (M_J)	$0.507\ ^{+0.0268}_{-0.029}$	$0.507\ ^{+0.0246}_{-0.0247}$
Core mass fraction	$0.0097\ ^{+0.0212}_{-0.00699}$	$0.0203\ ^{+0.0258}_{-0.0141}$
Core mass (M_{earth})	$1.6\ ^{+3.3}_{-1.1}$	$3.3\ ^{+4.2}_{-2.3}$
Y	$0.27\ ^{+0.0095}_{-0.0091}$	$0.27\ ^{+0.0086}_{-0.008}$
Z_{atm}	2.3e-07 $^{+1.1e-05}_{-2.2e-07}$	2.6e-07 $^{+3.1e-05}_{-2.6e-07}$
$\log_{10}(Z_{atm})$	-6.6 $^{+1.7}_{-1.7}$	-6.6 $^{+2.1}_{-1.7}$
Metal mass (M_{earth})	$1.6\ ^{+3.4}_{-1.1}$	$4.3\ ^{+5}_{-2.5}$
T_{eq} (K)	$1210\ ^{+57}_{-54}$	$1204\ ^{+50}_{-50}$
Internal luminosity (L_J)	$1.28\ ^{+0.139}_{-0.351}$	$1.22\ ^{+0.171}_{-0.272}$
m_{dilute}	-	$0.36\ ^{+0.37}_{-0.3}$
Z_{dilute}	-	$0.062\ ^{+0.42}_{-0.049}$
Radius (R_J)	$1.01\ ^{+0.0107}_{-0.0246}$	$0.994\ ^{+0.0176}_{-0.0261}$

Table 28: Fitting results for WASP-6 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24.9±0.0139	-25.4±0.0212
Mass (M_J)	$0.38\ ^{+0.0286}_{-0.0294}$	$0.382\ ^{+0.0264}_{-0.0286}$
Core mass fraction	$0.159\ ^{+0.333}_{-0.118}$	$0.178\ ^{+0.389}_{-0.123}$
Core mass (M_{earth})	$19\ ^{+42}_{-14}$	$22\ ^{+47}_{-15}$
Y	$0.28\ ^{+0.0097}_{-0.0091}$	$0.28\ ^{+0.0096}_{-0.0092}$
Z_{atm}	8.7e-07 $^{+0.00036}_{-8.7e-07}$	2.2e-06 $^{+0.00082}_{-2.2e-06}$
$\log_{10}(Z_{atm})$	$-6.1\ ^{+2.6}_{-2.5}$	$-5.7\ ^{+2.6}_{-2.6}$
Metal mass (M_{earth})	$19\ ^{+41}_{-14}$	$25\ ^{+48}_{-14}$
T_{eq} (K)	$1539\ ^{+37}_{-38}$	$1537\ ^{+36}_{-33}$
Internal luminosity (L_J)	$2.24\ ^{+1.06}_{-1.19}$	$2.29\ ^{+1.08}_{-1.21}$
m_{dilute}	-	$0.4\ ^{+0.36}_{-0.29}$
Z_{dilute}	-	$0.36\ ^{+0.41}_{-0.26}$
Radius (R_J)	$0.95\ ^{+0.092}_{-0.226}$	$0.909\ ^{+0.0611}_{-0.187}$

Table 29: Fitting results for WASP-63 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-26.3±0.0148	-27.3±0.0227
Mass (M_J)	$0.421\ ^{+0.0389}_{-0.0389}$	$0.422\ ^{+0.0364}_{-0.0371}$
Core mass fraction	$0.0835\ ^{+0.203}_{-0.0608}$	$0.12\ ^{+0.275}_{-0.0823}$
Core mass (M_{earth})	$11\ ^{+27}_{-8.3}$	$16\ ^{+35}_{-11}$
Y	$0.28\ ^{+0.0086}_{-0.01}$	$0.28\ ^{+0.0096}_{-0.0098}$
Z_{atm}	2.7e-06 $^{+6.7e-05}_{-2.6e-06}$	2.9e-06 $^{+6.9e-05}_{-2.8e-06}$
$\log_{10}(Z_{atm})$	$-5.6\ ^{+1.4}_{-1.5}$	$-5.5\ ^{+1.4}_{-1.5}$
Metal mass (M_{earth})	$11\ ^{+27}_{-8.3}$	$19\ ^{+36}_{-11}$
T_{eq} (K)	$1039\ ^{+28}_{-27}$	$1041\ ^{+29}_{-27}$
Internal luminosity (L_J)	$2.7\ ^{+1.15}_{-1.39}$	$2.86\ ^{+1.14}_{-1.47}$
m_{dilute}	-	$0.33\ ^{+0.36}_{-0.23}$
Z_{dilute}	-	$0.31\ ^{+0.44}_{-0.22}$
Radius (R_J)	$0.973\ ^{+0.0502}_{-0.136}$	$0.913\ ^{+0.055}_{-0.101}$

Table 30: Fitting results for WASP-67 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.2±0.0173	-25.4±0.0225
Mass (M_J)	$0.262\ ^{+0.015}_{-0.0167}$	$0.258\ ^{+0.0161}_{-0.0148}$
Core mass fraction	$0.0996\ ^{+0.0703}_{-0.0593}$	$0.07\ ^{+0.0677}_{-0.0453}$
Core mass (M_{earth})	$8.3\ ^{+5.6}_{-5}$	$5.7\ ^{+5.8}_{-3.7}$
Y	$0.28\ ^{+0.0094}_{-0.0096}$	$0.28\ ^{+0.0093}_{-0.009}$
Z_{atm}	8.6e-05 $^{+0.001}_{-7.9e-05}$	$0.0001\ ^{+0.0024}_{-9.9e-05}$
$\log_{10}(Z_{atm})$	-4.1 $^{+1.1}_{-1.1}$	-4 $^{+1.4}_{-1.3}$
Metal mass (M_{earth})	$8.4\ ^{+5.7}_{-5}$	$8.2\ ^{+5.5}_{-3.6}$
T_{eq} (K)	$964.4\ ^{+16}_{-18}$	$962.9\ ^{+16}_{-17}$
Internal luminosity (L_J)	$9.08\ ^{+4.19}_{-4.58}$	$10.5\ ^{+3.42}_{-4.03}$
m_{dilute}	-	$0.54\ ^{+0.28}_{-0.29}$
Z_{dilute}	-	$0.19\ ^{+0.47}_{-0.14}$
Radius (R_J)	$1.05\ ^{+0.0354}_{-0.0574}$	$1.03\ ^{+0.041}_{-0.0623}$

Table 31: Fitting results for WASP-69 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{\rm ev})$	-26.4±0.0781	-28.7±0.0671
Mass ($M_{\rm J}$)	$0.825\ ^{+0.0128}_{-0.0128}$	$0.825\ ^{+0.0123}_{-0.0118}$
Core mass fraction	$0.0172\ ^{+0.0254}_{-0.0121}$	$0.0274\ ^{+0.0332}_{-0.0186}$
Core mass ($M_{\rm earth}$)	$4.5\ ^{+6.7}_{-3.2}$	$7.2\ ^{+8.6}_{-4.9}$
Y	$0.27\ ^{+0.0089}_{-0.0095}$	$0.28\ ^{+0.0087}_{-0.0092}$
$Z_{\rm atm}$	7.4e-06 $^{+0.031}_{-7.4e-06}$	$0.00036\ ^{+0.12}_{-0.00036}$
$\log_{10}(Z_{\rm atm})$	$-5.1\ ^{+3.6}_{-2.8}$	$-3.4\ ^{+2.5}_{-4.3}$
Metal mass ($M_{\rm earth}$)	$5.6\ ^{+12}_{-4.1}$	$11\ ^{+22}_{-7.4}$
T_{eq} (K)	$1927\ ^{+44}_{-42}$	$1930\ ^{+42}_{-43}$
Internal luminosity ($L_{\rm J}$)	$17.5\ ^{+2.82}_{-5.07}$	$17.3\ ^{+2.73}_{-4.16}$
m_{dilute}	-	$0.15\ ^{+0.33}_{-0.11}$
Z_{dilute}	-	$0.2\ ^{+0.39}_{-0.16}$
Radius ($R_{\rm J}$)	$1.18\ ^{+0.0255}_{-0.0302}$	$1.18\ ^{+0.0532}_{-0.0355}$

Table 32: Fitting results for WASP-74 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{\rm ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-27.1±0.0143	-27.9±0.0287
Mass (M_J)	$0.922\ ^{+0.0278}_{-0.0304}$	$0.921\ ^{+0.0262}_{-0.0284}$
Core mass fraction	$0.0959\ ^{+0.251}_{-0.0721}$	$0.115\ ^{+0.245}_{-0.0857}$
Core mass (M_{earth})	$28\ ^{+72}_{-21}$	$34\ ^{+70}_{-25}$
Y	$0.28\ ^{+0.01}_{-0.0096}$	$0.28\ ^{+0.0095}_{-0.0091}$
Z_{atm}	$0.0027\ ^{+0.031}_{-0.0025}$	$0.0022\ ^{+0.026}_{-0.002}$
$\log_{10}(Z_{atm})$	$-2.6\ ^{+1.1}_{-1.2}$	$-2.7\ ^{+1.1}_{-1.1}$
Metal mass (M_{earth})	$35\ ^{+70}_{-25}$	$42\ ^{+77}_{-28}$
T_{eq} (K)	$2191\ ^{+42}_{-43}$	$2195\ ^{+39}_{-40}$
Internal luminosity (L_J)	$11.4\ ^{+4.84}_{-6.6}$	$11.6\ ^{+4.48}_{-6.08}$
m_{dilute}	-	$0.31\ ^{+0.38}_{-0.22}$
Z_{dilute}	-	$0.33\ ^{+0.42}_{-0.23}$
Radius (R_J)	$1.11\ ^{+0.0756}_{-0.2}$	$1.05\ ^{+0.0901}_{-0.181}$

Table 33: Fitting results for WASP-76 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-25±0.0645	-27.7±0.0934
Mass (M_J)	$1.75^{+0.0536}_{-0.0557}$	$1.75^{+0.0538}_{-0.0526}$
Core mass fraction	$0.014^{+0.018}_{-0.00983}$	$0.014^{+0.0164}_{-0.00924}$
Core mass (M_{earth})	$7.8^{+9.9}_{-5.5}$	$7.8^{+9.2}_{-5.1}$
Y	$0.27^{+0.0098}_{-0.009}$	$0.27^{+0.0078}_{-0.0087}$
Z_{atm}	$0.00012^{+2.6e-05}_{-2.5e-05}$	$0.00012^{+2.5e-05}_{-2.3e-05}$
$\log_{10}(Z_{atm})$	$-3.9^{+0.085}_{-0.098}$	$-3.9^{+0.082}_{-0.093}$
Metal mass (M_{earth})	$7.9^{+9.9}_{-5.5}$	$8.9^{+9.4}_{-5.2}$
T_{eq} (K)	1718^{+23}_{-25}	1718^{+21}_{-23}
Internal luminosity (L_J)	$64.8^{+13}_{-17.9}$	$71.7^{+8.6}_{-13.2}$
m_{dilute}	-	$0.11^{+0.24}_{-0.078}$
Z_{dilute}	-	$0.13^{+0.28}_{-0.1}$
Radius (R_J)	$1.19^{+0.0144}_{-0.0234}$	$1.18^{+0.0142}_{-0.0212}$

Table 34: Fitting results for WASP-77 A b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{\rm ev})$	-22.9±0.0197	-23.8±0.0315
Mass ($M_{\rm J}$)	$0.561\ ^{+0.0326}_{-0.0338}$	$0.556\ ^{+0.031}_{-0.0344}$
Core mass fraction	$0.127\ ^{+0.0578}_{-0.0566}$	$0.0918\ ^{+0.0661}_{-0.0586}$
Core mass ($M_{\rm earth}$)	$23\ ^{+10}_{-10}$	$16\ ^{+12}_{-10}$
Y	$0.28\ ^{+0.0096}_{-0.0096}$	$0.28\ ^{+0.008}_{-0.0088}$
$Z_{\rm atm}$	8.4e-06 $^{+0.0011}_{-8.4e-06}$	2.6e-06 $^{+0.00069}_{-2.6e-06}$
$\log_{10}(Z_{\rm atm})$	$-5.1\ ^{+2.1}_{-2.5}$	$-5.6\ ^{+2.4}_{-2.5}$
Metal mass ($M_{\rm earth}$)	$23\ ^{+11}_{-10}$	$19\ ^{+11}_{-9.1}$
T_{eq} (K)	$827.4\ ^{+19}_{-19}$	$825.9\ ^{+19}_{-19}$
Internal luminosity ($L_{\rm J}$)	$3.78\ ^{+2.19}_{-2.31}$	$4.02\ ^{+2.08}_{-1.96}$
m_{dilute}	-	$0.24\ ^{+0.33}_{-0.16}$
Z_{dilute}	-	$0.31\ ^{+0.39}_{-0.2}$
Radius ($R_{\rm J}$)	$0.95\ ^{+0.0279}_{-0.0333}$	$0.947\ ^{+0.0222}_{-0.0338}$

Table 35: Fitting results for WASP-80 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{\rm ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24.2±0.0302	-26.1±0.0531
Mass (M_J)	$0.479\ ^{+0.0271}_{-0.0283}$	$0.476\ ^{+0.0281}_{-0.0282}$
Core mass fraction	$0.0516\ ^{+0.069}_{-0.0342}$	$0.0634\ ^{+0.06}_{-0.0409}$
Core mass (M_{earth})	$7.8\ ^{+11}_{-5.1}$	$9.6\ ^{+9}_{-6.1}$
Y	$0.28\ ^{+0.0091}_{-0.0093}$	$0.28\ ^{+0.009}_{-0.0093}$
Z_{atm}	$0.00018\ ^{+0.0012}_{-0.00015}$	$0.00018\ ^{+0.00092}_{-0.00015}$
$\log_{10}(Z_{atm})$	$-3.7\ ^{+0.89}_{-0.85}$	$-3.7\ ^{+0.79}_{-0.75}$
Metal mass (M_{earth})	$7.9\ ^{+11}_{-5.1}$	$11\ ^{+8.5}_{-5.5}$
T_{eq} (K)	$1286\ ^{+39}_{-41}$	$1287\ ^{+35}_{-36}$
Internal luminosity (L_J)	$39.2\ ^{+11.5}_{-15.2}$	$41.6\ ^{+9.5}_{-14.1}$
m_{dilute}	-	$0.24\ ^{+0.38}_{-0.15}$
Z_{dilute}	-	$0.27\ ^{+0.43}_{-0.2}$
Radius (R_J)	$1.16\ ^{+0.038}_{-0.0716}$	$1.12\ ^{+0.0395}_{-0.0613}$

Table 36: Fitting results for WASP-96 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-28.6±0.038	-30.5±0.0965
Mass (M_J)	$0.898\ ^{+0.0683}_{-0.0621}$	$0.884\ ^{+0.0643}_{-0.0569}$
Core mass fraction	$0.0146\ ^{+0.02}_{-0.0103}$	$0.0169\ ^{+0.0205}_{-0.0115}$
Core mass (M_{earth})	$4.1\ ^{+5.9}_{-3}$	$4.8\ ^{+5.9}_{-3.3}$
Y	$0.27\ ^{+0.0096}_{-0.0094}$	$0.27\ ^{+0.009}_{-0.0079}$
Z_{atm}	$0.014\ ^{+0.035}_{-0.014}$	$0.039\ ^{+0.05}_{-0.035}$
$\log_{10}(Z_{atm})$	$-1.9\ ^{+0.55}_{-2.3}$	$-1.4\ ^{+0.36}_{-1}$
Metal mass (M_{earth})	$9.7\ ^{+12}_{-7.2}$	$12\ ^{+9.4}_{-6}$
T_{eq} (K)	$1206\ ^{+10}_{-11}$	$1205\ ^{+9.8}_{-9.8}$
Internal luminosity (L_J)	$5.09\ ^{+0.848}_{-1.25}$	$5.28\ ^{+0.699}_{-1.17}$
m_{dilute}	-	$0.096\ ^{+0.24}_{-0.071}$
Z_{dilute}	-	$0.21\ ^{+0.33}_{-0.14}$
Radius (R_J)	$1.08\ ^{+0.0217}_{-0.026}$	$1.09\ ^{+0.0243}_{-0.0383}$

Table 37: Fitting results for XO-1 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

2 Results of the increased luminosity runs

2.1 Highest internal luminosity limit

In this appendix, we show the results of the runs on the inflated planets. For these runs, we set the upper limit on the internal luminosity to $10^{29}\,\mathrm{erg\,s^{-1}}$.

	Homogeneous	Inhomogeneous
ln(Z_{ev})	-24±0.0173	-24.7±0.0199
Mass (M_J)	$0.472\ ^{+0.0477}_{-0.0485}$	$0.463\ ^{+0.0459}_{-0.0458}$
Core mass fraction	$0.243\ ^{+0.217}_{-0.142}$	$0.206\ ^{+0.224}_{-0.126}$
Core mass (M_{earth})	$36\ ^{+30}_{-21}$	$31\ ^{+34}_{-18}$
Y	$0.28\ ^{+0.0093}_{-0.01}$	$0.28\ ^{+0.0092}_{-0.0097}$
Z_{atm}	$0.00027\ ^{+0.0025}_{-0.00024}$	$0.00025\ ^{+0.0017}_{-0.00021}$
$\log_{10}(Z_{atm})$	$-3.6\ ^{+1}_{-0.95}$	$-3.6\ ^{+0.9}_{-0.85}$
Metal mass (M_{earth})	$36\ ^{+31}_{-21}$	$36\ ^{+32}_{-19}$
T_{eq} (K)	$1224\ ^{+74}_{-71}$	$1227\ ^{+67}_{-69}$
Internal luminosity (L_J)	$1.64e{+}04\ ^{+9.36e+03}_{-9.73e+03}$	$1.68e{+}04\ ^{+9e+03}_{-8.81e+03}$
m_{dilute}	-	$0.36\ ^{+0.31}_{-0.25}$
Z_{dilute}	-	$0.45\ ^{+0.31}_{-0.29}$
Radius (R_J)	$1.78\ ^{+0.246}_{-0.392}$	$1.72\ ^{+0.244}_{-0.403}$

Table 38: Fitting results for 51 Peg b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z_{ev}) is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
ln(Z_{ev})	-23.7±0.0364	-24±0.055
Mass (M_J)	$0.525^{+0.0186}_{-0.0167}$	$0.523^{+0.0179}_{-0.0163}$
Core mass fraction	$0.476^{+0.0604}_{-0.0877}$	$0.437^{+0.0852}_{-0.173}$
Core mass (M_{earth})	$79^{+9.5}_{-14}$	72^{+15}_{-28}
Y	$0.28^{+0.0094}_{-0.0099}$	$0.28^{+0.0086}_{-0.0087}$
Z_{atm}	$0.0017^{+0.0026}_{-0.0011}$	$0.0019^{+0.0025}_{-0.0011}$
$\log_{10}(Z_{atm})$	$-2.8^{+0.41}_{-0.44}$	$-2.7^{+0.37}_{-0.36}$
Metal mass (M_{earth})	$79^{+9.5}_{-14}$	75^{+13}_{-17}
T_{eq} (K)	1323^{+13}_{-14}	1323^{+13}_{-13}
Internal luminosity (L_J)	$1.66e{+}04^{+8.46e+03}_{-9.81e+03}$	$1.63e{+}04^{+8.78e+03}_{-9.55e+03}$
m_{dilute}	-	$0.43^{+0.27}_{-0.26}$
Z_{dilute}	-	$0.43^{+0.27}_{-0.27}$
Radius (R_J)	$1.32^{+0.0193}_{-0.0208}$	$1.32^{+0.019}_{-0.0226}$

Table 39: Fitting results for HAT-P-1 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z_{ev}) is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24±0.024	-24.8±0.0943
Mass (M_J)	$0.766\ ^{+0.113}_{-0.112}$	$0.736\ ^{+0.105}_{-0.105}$
Core mass fraction	$0.194\ ^{+0.0975}_{-0.0914}$	$0.159\ ^{+0.099}_{-0.0899}$
Core mass (M_{earth})	$47\ ^{+18}_{-22}$	$37\ ^{+21}_{-21}$
Y	$0.28\ ^{+0.009}_{-0.0093}$	$0.28\ ^{+0.0094}_{-0.0086}$
Z_{atm}	$0.00089\ ^{+0.0056}_{-0.00076}$	$0.0011\ ^{+0.0042}_{-0.00086}$
$\log_{10}(Z_{atm})$	$-3\ ^{+0.86}_{-0.83}$	$-3\ ^{+0.69}_{-0.7}$
Metal mass (M_{earth})	$48\ ^{+18}_{-22}$	$42\ ^{+18}_{-18}$
T_{eq} (K)	$1786\ ^{+24}_{-26}$	$1786\ ^{+24}_{-22}$
Internal luminosity (L_J)	$1.69e{+}04\ ^{+8.15e+03}_{-7.97e+03}$	$1.9e{+}04\ ^{+6.46e+03}_{-7.77e+03}$
m_{dilute}	-	$0.28\ ^{+0.27}_{-0.15}$
Z_{dilute}	-	$0.4\ ^{+0.37}_{-0.24}$
Radius (R_J)	$1.79\ ^{+0.0255}_{-0.0306}$	$1.79\ ^{+0.0277}_{-0.027}$

Table 40: Fitting results for HAT-P-32 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
ln(Z$_{\rm ev}$)	-23.9±0.0199	-24.4±0.0316
Mass ($M_{\rm J}$)	$0.797\ ^{+0.0977}_{-0.0897}$	$0.795\ ^{+0.0929}_{-0.098}$
Core mass fraction	$0.276\ ^{+0.105}_{-0.13}$	$0.23\ ^{+0.125}_{-0.138}$
Core mass ($M_{\rm earth}$)	$70\ ^{+25}_{-33}$	$57\ ^{+30}_{-33}$
Y	$0.28\ ^{+0.0099}_{-0.0087}$	$0.28\ ^{+0.0081}_{-0.0093}$
$Z_{\rm atm}$	$0.00093\ ^{+0.0068}_{-0.00082}$	$0.0013\ ^{+0.0068}_{-0.0011}$
$\log_{10}(Z_{\rm atm})$	$-3\ ^{+0.92}_{-0.92}$	$-2.9\ ^{+0.81}_{-0.87}$
Metal mass ($M_{\rm earth}$)	$70\ ^{+26}_{-33}$	$65\ ^{+25}_{-26}$
T$_{eq}$ (K)	$1941\ ^{+39}_{-38}$	$1939\ ^{+35}_{-35}$
Internal luminosity ($L_{\rm J}$)	$1.53e{+}04\ ^{+9.78e+03}_{-9.07e+03}$	$1.88e{+}04\ ^{+6.79e+03}_{-7.69e+03}$
m$_{dilute}$	-	$0.38\ ^{+0.32}_{-0.22}$
Z_{dilute}	-	$0.47\ ^{+0.33}_{-0.3}$
Radius ($R_{\rm J}$)	$1.68\ ^{+0.0651}_{-0.0716}$	$1.68\ ^{+0.0574}_{-0.0731}$

Table 41: Fitting results for HAT-P-41 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z$_{\rm ev}$) is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T$_{eq}$ is the equilibrium temperature, m$_{dilute}$ is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
ln(Z_{ev})	-23.6±0.0201	-24±0.0385
Mass (M_J)	$0.691\ ^{+0.0153}_{-0.0156}$	$0.689\ ^{+0.0148}_{-0.0146}$
Core mass fraction	$0.39\ ^{+0.0591}_{-0.0913}$	$0.351\ ^{+0.0815}_{-0.153}$
Core mass (M_{earth})	$85\ ^{+13}_{-20}$	$77\ ^{+18}_{-34}$
Y	$0.28\ ^{+0.01}_{-0.01}$	$0.28\ ^{+0.0095}_{-0.0082}$
Z_{atm}	2e-05 $^{+2.2e-05}_{-1.1e-05}$	2.1e-05 $^{+2.2e-05}_{-1e-05}$
$\log_{10}(Z_{atm})$	-4.7 $^{+0.32}_{-0.34}$	-4.7 $^{+0.31}_{-0.3}$
Metal mass (M_{earth})	$85\ ^{+13}_{-20}$	$81\ ^{+15}_{-24}$
T_{eq} (K)	$1448\ ^{+12}_{-11}$	$1447\ ^{+12}_{-11}$
Internal luminosity (L_J)	1.69e+04 $^{+8.26e+03}_{-9.92e+03}$	1.75e+04 $^{+7.42e+03}_{-8.7e+03}$
m_{dilute}	-	$0.41\ ^{+0.27}_{-0.24}$
Z_{dilute}	-	$0.42\ ^{+0.33}_{-0.26}$
Radius (R_J)	$1.38\ ^{+0.0192}_{-0.0195}$	$1.38\ ^{+0.0199}_{-0.0189}$

Table 42: Fitting results for HD 209458 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z_{ev}) is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
ln(Z_{ev})	-24±0.023	-24.9±0.038
Mass (M_J)	$1.47^{+0.0732}_{-0.063}$	$1.48^{+0.0613}_{-0.076}$
Core mass fraction	$0.145^{+0.0831}_{-0.0841}$	$0.125^{+0.0854}_{-0.0822}$
Core mass (M_{earth})	68^{+38}_{-40}	59^{+39}_{-39}
Y	$0.28^{+0.01}_{-0.0098}$	$0.28^{+0.0087}_{-0.0089}$
Z_{atm}	$0.00076^{+0.0022}_{-0.00057}$	$0.00075^{+0.0022}_{-0.00057}$
$\log_{10}(Z_{atm})$	$-3.1^{+0.59}_{-0.6}$	$-3.1^{+0.6}_{-0.64}$
Metal mass (M_{earth})	69^{+38}_{-40}	69^{+36}_{-34}
T_{eq} (K)	2546^{+77}_{-73}	2559^{+70}_{-74}
Internal luminosity (L_J)	$1.82e{+}04^{+7.21e+03}_{-8.34e+03}$	$2.14e{+}04^{+5.49e+03}_{-7.64e+03}$
m_{dilute}	-	$0.31^{+0.33}_{-0.2}$
Z_{dilute}	-	$0.32^{+0.37}_{-0.21}$
Radius (R_J)	$1.9^{+0.0652}_{-0.068}$	$1.89^{+0.0531}_{-0.0759}$

Table 43: Fitting results for WASP-12 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z_{ev}) is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.9±0.0209	-24.9±0.031
Mass (M_J)	$1.18^{+0.0582}_{-0.061}$	$1.19^{+0.0595}_{-0.0618}$
Core mass fraction	$0.166^{+0.0761}_{-0.0957}$	$0.128^{+0.0876}_{-0.0762}$
Core mass (M_{earth})	62^{+29}_{-35}	48^{+32}_{-29}
Y	$0.28^{+0.0092}_{-0.0099}$	$0.28^{+0.009}_{-0.008}$
Z_{atm}	$0.00068^{+0.0029}_{-0.00055}$	$0.00062^{+0.0032}_{-0.0005}$
$\log_{10}(Z_{atm})$	$-3.2^{+0.73}_{-0.73}$	$-3.2^{+0.79}_{-0.71}$
Metal mass (M_{earth})	62^{+30}_{-35}	57^{+28}_{-27}
T_{eq} (K)	2360^{+45}_{-50}	2365^{+46}_{-47}
Internal luminosity (L_J)	$1.74e{+}04^{+8.06e+03}_{-7.98e+03}$	$2.02e{+}04^{+6.16e+03}_{-6.84e+03}$
m_{dilute}	-	$0.31^{+0.28}_{-0.18}$
Z_{dilute}	-	$0.36^{+0.34}_{-0.23}$
Radius (R_J)	$1.86^{+0.0458}_{-0.057}$	$1.86^{+0.0432}_{-0.0517}$

Table 44: Fitting results for WASP-121 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24.3±0.0201	-25.1±0.0573
Mass (M_J)	$0.485\ ^{+0.0292}_{-0.026}$	$0.489\ ^{+0.0288}_{-0.0326}$
Core mass fraction	$0.266\ ^{+0.0841}_{-0.12}$	$0.226\ ^{+0.0968}_{-0.123}$
Core mass (M_{earth})	$41\ ^{+13}_{-19}$	$35\ ^{+16}_{-19}$
Y	$0.28\ ^{+0.01}_{-0.0096}$	$0.28\ ^{+0.0083}_{-0.009}$
Z_{atm}	9.8e-05 $^{+0.00029}_{-7.5e-05}$	8.7e-05 $^{+0.0003}_{-6.7e-05}$
$\log_{10}(Z_{atm})$	-4 $^{+0.59}_{-0.63}$	-4.1 $^{+0.65}_{-0.64}$
Metal mass (M_{earth})	$41\ ^{+13}_{-19}$	$39\ ^{+13}_{-17}$
T_{eq} (K)	$1769\ ^{+34}_{-34}$	$1771\ ^{+30}_{-32}$
Internal luminosity (L_J)	1.63e+04 $^{+9.23e+03}_{-8.73e+03}$	1.9e+04 $^{+7.43e+03}_{-8.28e+03}$
m_{dilute}	-	$0.34\ ^{+0.25}_{-0.21}$
Z_{dilute}	-	$0.4\ ^{+0.33}_{-0.24}$
Radius (R_J)	$1.98\ ^{+0.0829}_{-0.0948}$	$1.98\ ^{+0.0742}_{-0.0873}$

Table 45: Fitting results for WASP-17 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.5±0.0288	-24.1±0.0406
Mass (M_J)	$1.14^{+0.0267}_{-0.0293}$	$1.14^{+0.0271}_{-0.0235}$
Core mass fraction	$0.381^{+0.0841}_{-0.118}$	$0.332^{+0.12}_{-0.193}$
Core mass (M_{earth})	1.4e+02 $^{+30}_{-42}$	1.2e+02 $^{+42}_{-69}$
Y	$0.28^{+0.0096}_{-0.0098}$	$0.28^{+0.0086}_{-0.0082}$
Z_{atm}	$0.00011^{+0.00077}_{-0.0001}$	$0.0001^{+0.00064}_{-9.2e-05}$
$\log_{10}(Z_{atm})$	-3.9 $^{+0.89}_{-1}$	-4 $^{+0.86}_{-0.94}$
Metal mass (M_{earth})	1.4e+02 $^{+30}_{-42}$	1.3e+02 $^{+34}_{-53}$
T_{eq} (K)	2101^{+37}_{-36}	2100^{+35}_{-34}
Internal luminosity (L_J)	1.49e+04 $^{+9.2e+03}_{-8.68e+03}$	1.68e+04 $^{+8.43e+03}_{-8.69e+03}$
m_{dilute}	-	$0.48^{+0.26}_{-0.29}$
Z_{dilute}	-	$0.42^{+0.35}_{-0.26}$
Radius (R_J)	$1.41^{+0.0188}_{-0.0193}$	$1.41^{+0.0187}_{-0.0196}$

Table 46: Fitting results for WASP-19 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
ln(Z_{ev})	-24±0.0252	-24.3±0.036
Mass (M_J)	$0.383^{+0.0288}_{-0.0284}$	$0.386^{+0.0249}_{-0.0263}$
Core mass fraction	$0.53^{+0.0875}_{-0.13}$	$0.457^{+0.118}_{-0.181}$
Core mass (M_{earth})	$65^{+9.9}_{-17}$	56^{+14}_{-24}
Y	$0.28^{+0.0092}_{-0.0093}$	$0.28^{+0.01}_{-0.0086}$
Z_{atm}	5.7e-07 $^{+0.0001}_{-5.7e-07}$	1.1e-06 $^{+0.00019}_{-1.1e-06}$
$\log_{10}(Z_{atm})$	-6.2 $^{+2.2}_{-2.5}$	-6 $^{+2.3}_{-2.2}$
Metal mass (M_{earth})	$65^{+9.9}_{-17}$	61^{+11}_{-15}
T_{eq} (K)	1538^{+34}_{-36}	1535^{+33}_{-33}
Internal luminosity (L_J)	1.46e+04 $^{+1.01e+04}_{-1.03e+04}$	1.53e+04 $^{+8.92e+03}_{-9.23e+03}$
m_{dilute}	-	$0.57^{+0.23}_{-0.32}$
Z_{dilute}	-	$0.53^{+0.27}_{-0.29}$
Radius (R_J)	$1.43^{+0.0647}_{-0.0722}$	$1.42^{+0.0558}_{-0.0678}$

Table 47: Fitting results for WASP-63 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z_{ev}) is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
ln(Z_{ev})	-24±0.0214	-24.7±0.0382
Mass (M_J)	$0.921^{+0.0278}_{-0.027}$	$0.923^{+0.0275}_{-0.0258}$
Core mass fraction	$0.209^{+0.0913}_{-0.112}$	$0.17^{+0.105}_{-0.0977}$
Core mass (M_{earth})	61^{+27}_{-33}	50^{+31}_{-29}
Y	$0.27^{+0.01}_{-0.0091}$	$0.28^{+0.0096}_{-0.0089}$
Z_{atm}	$0.0011^{+0.0048}_{-0.001}$	$0.0014^{+0.0079}_{-0.0012}$
$\log_{10}(Z_{atm})$	$-2.9^{+0.71}_{-0.95}$	$-2.8^{+0.82}_{-0.86}$
Metal mass (M_{earth})	62^{+27}_{-33}	57^{+27}_{-26}
T_{eq} (K)	2190^{+40}_{-36}	2190^{+41}_{-40}
Internal luminosity (L_J)	$1.71e{+}04^{+8.56e+03}_{-9.4e+03}$	$1.89e{+}04^{+6.97e+03}_{-8.27e+03}$
m_{dilute}	-	$0.31^{+0.35}_{-0.19}$
Z_{dilute}	-	$0.37^{+0.39}_{-0.24}$
Radius (R_J)	$1.83^{+0.0626}_{-0.0695}$	$1.82^{+0.0591}_{-0.0753}$

Table 48: Fitting results for WASP-76 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. ln(Z_{ev}) is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

2.2 More constrained high luminosity limit

In this appendix, we show the results of the runs on a selection of the inflated planets. We set the upper limit on the internal luminosity to $10^28\,\mathrm{erg\,s^{-1}}$, to test the effect of constraining the inflation mechanism.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.4±0.0228	-24.2±0.0385
Mass (M_J)	$0.524\ ^{+0.0184}_{-0.0168}$	$0.522\ ^{+0.0158}_{-0.0156}$
Core mass fraction	$0.25\ ^{+0.0435}_{-0.0962}$	$0.172\ ^{+0.0924}_{-0.0937}$
Core mass (M_{earth})	$41\ ^{+7.7}_{-16}$	$28\ ^{+16}_{-15}$
Y	$0.28\ ^{+0.0086}_{-0.0094}$	$0.28\ ^{+0.0089}_{-0.0088}$
Z_{atm}	$0.0017\ ^{+0.0028}_{-0.0011}$	$0.0017\ ^{+0.0025}_{-0.00098}$
$\log_{10}(Z_{atm})$	$-2.8\ ^{+0.42}_{-0.45}$	$-2.8\ ^{+0.39}_{-0.36}$
Metal mass (M_{earth})	$42\ ^{+7.6}_{-16}$	$34\ ^{+12}_{-14}$
T_{eq} (K)	$1323\ ^{+14}_{-13}$	$1324\ ^{+12}_{-13}$
Internal luminosity (L_J)	$1.63e{+}03\ ^{+890}_{-940}$	$1.71e{+}03\ ^{+846}_{-918}$
m_{dilute}	-	$0.38\ ^{+0.35}_{-0.21}$
Z_{dilute}	-	$0.31\ ^{+0.31}_{-0.18}$
Radius (R_J)	$1.32\ ^{+0.0191}_{-0.0228}$	$1.32\ ^{+0.0205}_{-0.0229}$

Table 49: Fitting results for HAT-P-1 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-25.7±0.116	-27.1±0.169
Mass (M_J)	$0.637\ ^{+0.157}_{-0.0873}$	$0.678\ ^{+0.144}_{-0.132}$
Core mass fraction	$0.0428\ ^{+0.0693}_{-0.0302}$	$0.0753\ ^{+0.0762}_{-0.0443}$
Core mass (M_{earth})	$8.7\ ^{+17}_{-6.1}$	$16\ ^{+18}_{-9.3}$
Y	$0.28\ ^{+0.0092}_{-0.0086}$	$0.28\ ^{+0.0092}_{-0.0086}$
Z_{atm}	$0.0051\ ^{+0.034}_{-0.0048}$	$0.028\ ^{+0.039}_{-0.023}$
$\log_{10}(Z_{atm})$	$-2.3\ ^{+0.89}_{-1.3}$	$-1.6\ ^{+0.38}_{-0.75}$
Metal mass (M_{earth})	$10\ ^{+22}_{-7.2}$	$22\ ^{+19}_{-12}$
T_{eq} (K)	$1789\ ^{+24}_{-22}$	$1789\ ^{+22}_{-22}$
Internal luminosity (L_J)	$2.36e{+}03\ ^{+416}_{-630}$	$2.28e{+}03\ ^{+473}_{-755}$
m_{dilute}	-	$0.18\ ^{+0.27}_{-0.12}$
Z_{dilute}	-	$0.29\ ^{+0.31}_{-0.19}$
Radius (R_J)	$1.78\ ^{+0.0239}_{-0.0322}$	$1.79\ ^{+0.0234}_{-0.0314}$

Table 50: Fitting results for HAT-P-32 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-24.7±0.0255	-25.9±0.075
Mass (M_J)	$0.787\ ^{+0.0962}_{-0.0919}$	$0.766\ ^{+0.0866}_{-0.087}$
Core mass fraction	$0.0665\ ^{+0.0984}_{-0.0491}$	$0.0859\ ^{+0.117}_{-0.059}$
Core mass (M_{earth})	$17\ ^{+23}_{-12}$	$20\ ^{+29}_{-14}$
Y	$0.28\ ^{+0.0095}_{-0.0095}$	$0.28\ ^{+0.0095}_{-0.0093}$
Z_{atm}	$0.0032\ ^{+0.029}_{-0.003}$	$0.017\ ^{+0.054}_{-0.016}$
$\log_{10}(Z_{atm})$	$-2.5\ ^{+1}_{-1.2}$	$-1.8\ ^{+0.62}_{-1.5}$
Metal mass (M_{earth})	$18\ ^{+29}_{-12}$	$28\ ^{+35}_{-18}$
T_{eq} (K)	$1948\ ^{+33}_{-37}$	$1942\ ^{+33}_{-34}$
Internal luminosity (L_J)	2.15e+03 $^{+569}_{-741}$	2.2e+03 $^{+532}_{-726}$
m_{dilute}	-	$0.24\ ^{+0.3}_{-0.16}$
Z_{dilute}	-	$0.36\ ^{+0.37}_{-0.25}$
Radius (R_J)	$1.66\ ^{+0.056}_{-0.0826}$	$1.66\ ^{+0.0545}_{-0.0844}$

Table 51: Fitting results for HAT-P-41 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{\rm ev})$	-23.7±0.0205	-24.4±0.0648
Mass ($M_{\rm J}$)	$0.69\ ^{+0.0166}_{-0.0165}$	$0.69\ ^{+0.0153}_{-0.0154}$
Core mass fraction	$0.155\ ^{+0.0433}_{-0.0756}$	$0.118\ ^{+0.0568}_{-0.0728}$
Core mass ($M_{\rm earth}$)	$34\ ^{+9.5}_{-16}$	$26\ ^{+13}_{-16}$
Y	$0.28\ ^{+0.009}_{-0.01}$	$0.28\ ^{+0.0084}_{-0.0093}$
$Z_{\rm atm}$	2.2e-05 $^{+2.6e-05}_{-1.2e-05}$	2.2e-05 $^{+2.1e-05}_{-1.2e-05}$
$\log_{10}(Z_{\rm atm})$	-4.7 $^{+0.34}_{-0.32}$	-4.6 $^{+0.29}_{-0.32}$
Metal mass ($M_{\rm earth}$)	$34\ ^{+9.5}_{-16}$	$29\ ^{+11}_{-14}$
T_{eq} (K)	$1449\ ^{+11}_{-12}$	$1450\ ^{+11}_{-11}$
Internal luminosity ($L_{\rm J}$)	1.75e+03 $^{+856}_{-955}$	1.84e+03 $^{+744}_{-769}$
m_{dilute}	-	$0.25\ ^{+0.3}_{-0.15}$
Z_{dilute}	-	$0.27\ ^{+0.47}_{-0.19}$
Radius ($R_{\rm J}$)	$1.38\ ^{+0.0187}_{-0.0216}$	$1.38\ ^{+0.0173}_{-0.0197}$

Table 52: Fitting results for HD 209458 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{\rm ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, $Z_{\rm atm}$ is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-27.7±0.321	-30.5±0.208
Mass (M_J)	$1.43\ ^{+0.0693}_{-0.0622}$	$1.44\ ^{+0.0571}_{-0.0588}$
Core mass fraction	$0.0227\ ^{+0.036}_{-0.0162}$	$0.0233\ ^{+0.0302}_{-0.0157}$
Core mass (M_{earth})	$10\ ^{+17}_{-7.2}$	$11\ ^{+14}_{-7.1}$
Y	$0.28\ ^{+0.0091}_{-0.0088}$	$0.28\ ^{+0.0085}_{-0.0081}$
Z_{atm}	$0.0027\ ^{+0.022}_{-0.0024}$	$0.0038\ ^{+0.025}_{-0.0035}$
$\log_{10}(Z_{atm})$	$-2.6\ ^{+0.97}_{-0.92}$	$-2.4\ ^{+0.88}_{-1.1}$
Metal mass (M_{earth})	$13\ ^{+24}_{-9.1}$	$15\ ^{+17}_{-8.5}$
T_{eq} (K)	$2617\ ^{+77}_{-82}$	$2611\ ^{+80}_{-73}$
Internal luminosity (L_J)	$2.56e{+}03\ ^{+291}_{-510}$	$2.56e{+}03\ ^{+274}_{-429}$
m_{dilute}	-	$0.12\ ^{+0.2}_{-0.08}$
Z_{dilute}	-	$0.21\ ^{+0.35}_{-0.15}$
Radius (R_J)	$1.82\ ^{+0.0696}_{-0.074}$	$1.8\ ^{+0.0932}_{-0.0637}$

Table 53: Fitting results for WASP-12 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-27±0.0371	-28.4±0.0911
Mass (M_J)	$1.16^{+0.059}_{-0.0581}$	$1.16^{+0.0603}_{-0.0516}$
Core mass fraction	$0.0562^{+0.0653}_{-0.0434}$	$0.0561^{+0.0542}_{-0.0363}$
Core mass (M_{earth})	21^{+24}_{-16}	21^{+20}_{-13}
Y	$0.28^{+0.0091}_{-0.0091}$	$0.28^{+0.0083}_{-0.0083}$
Z_{atm}	$0.029^{+0.039}_{-0.017}$	$0.036^{+0.039}_{-0.017}$
$\log_{10}(Z_{atm})$	$-1.5^{+0.37}_{-0.41}$	$-1.4^{+0.32}_{-0.28}$
Metal mass (M_{earth})	32^{+36}_{-23}	31^{+25}_{-16}
T_{eq} (K)	2370^{+50}_{-47}	2367^{+47}_{-48}
Internal luminosity (L_J)	$2.38e+03^{+413}_{-654}$	$2.35e+03^{+437}_{-608}$
m_{dilute}	-	$0.18^{+0.23}_{-0.12}$
Z_{dilute}	-	$0.33^{+0.32}_{-0.2}$
Radius (R_J)	$1.85^{+0.0428}_{-0.0799}$	$1.85^{+0.0388}_{-0.0578}$

Table 54: Fitting results for WASP-121 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-25.6±0.0435	-28.5±0.0893
Mass (M_J)	$0.474\ ^{+0.0299}_{-0.0266}$	$0.46\ ^{+0.0257}_{-0.0257}$
Core mass fraction	$0.0335\ ^{+0.0362}_{-0.0226}$	$0.0562\ ^{+0.0323}_{-0.0276}$
Core mass (M_{earth})	$5\ ^{+5.5}_{-3.3}$	$8.2\ ^{+4.7}_{-3.9}$
Y	$0.28\ ^{+0.0094}_{-0.0091}$	$0.28\ ^{+0.0096}_{-0.0088}$
Z_{atm}	8e-05 $^{+0.00026}_{-6e-05}$	7.9e-05 $^{+0.00028}_{-5.9e-05}$
$\log_{10}(Z_{atm})$	-4.1 $^{+0.62}_{-0.6}$	-4.1 $^{+0.65}_{-0.6}$
Metal mass (M_{earth})	$5.1\ ^{+5.5}_{-3.4}$	$8.9\ ^{+4.4}_{-3.4}$
T_{eq} (K)	$1778\ ^{+31}_{-35}$	$1777\ ^{+30}_{-30}$
Internal luminosity (L_J)	2.47e+03 $^{+368}_{-585}$	2.6e+03 $^{+263}_{-421}$
m_{dilute}	-	$0.11\ ^{+0.25}_{-0.069}$
Z_{dilute}	-	$0.46\ ^{+0.33}_{-0.35}$
Radius (R_J)	$1.93\ ^{+0.0665}_{-0.0965}$	$1.87\ ^{+0.0616}_{-0.08}$

Table 55: Fitting results for WASP-17 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.

	Homogeneous	Inhomogeneous
$\ln(Z_{ev})$	-23.6±0.0341	-24.7±0.0523
Mass (M_J)	$1.14\ ^{+0.0279}_{-0.0268}$	$1.14\ ^{+0.0268}_{-0.0271}$
Core mass fraction	$0.12\ ^{+0.0488}_{-0.0704}$	$0.096\ ^{+0.0571}_{-0.0579}$
Core mass (M_{earth})	$44\ ^{+18}_{-26}$	$35\ ^{+21}_{-21}$
Y	$0.28\ ^{+0.011}_{-0.01}$	$0.28\ ^{+0.0084}_{-0.0095}$
Z_{atm}	$0.00011\ ^{+0.00081}_{-9.7e-05}$	$0.00014\ ^{+0.00083}_{-0.00012}$
$\log_{10}(Z_{atm})$	$-4\ ^{+0.93}_{-1.1}$	$-3.9\ ^{+0.85}_{-0.93}$
Metal mass (M_{earth})	$44\ ^{+18}_{-26}$	$41\ ^{+17}_{-19}$
T_{eq} (K)	$2096\ ^{+39}_{-35}$	$2096\ ^{+33}_{-32}$
Internal luminosity (L_J)	1.5e+03 $^{+998}_{-817}$	1.97e+03 $^{+650}_{-758}$
m_{dilute}	-	$0.23\ ^{+0.34}_{-0.14}$
Z_{dilute}	-	$0.3\ ^{+0.39}_{-0.2}$
Radius (R_J)	$1.41\ ^{+0.0167}_{-0.0208}$	$1.41\ ^{+0.0182}_{-0.0214}$

Table 56: Fitting results for WASP-19 b. The columns labelled "Homogeneous" and "Inhomogeneous" contain the results of the homogeneous and inhomogeneous runs, respectively. $\ln(Z_{ev})$ is the log evidence value produced by the fitting method. Y is the helium fraction, Z_{atm} is the atmospheric metal fraction, T_{eq} is the equilibrium temperature, m_{dilute} is the mass coordinate where the dilute core region is located and Z_{dilute} is the dilute core central metal fraction.