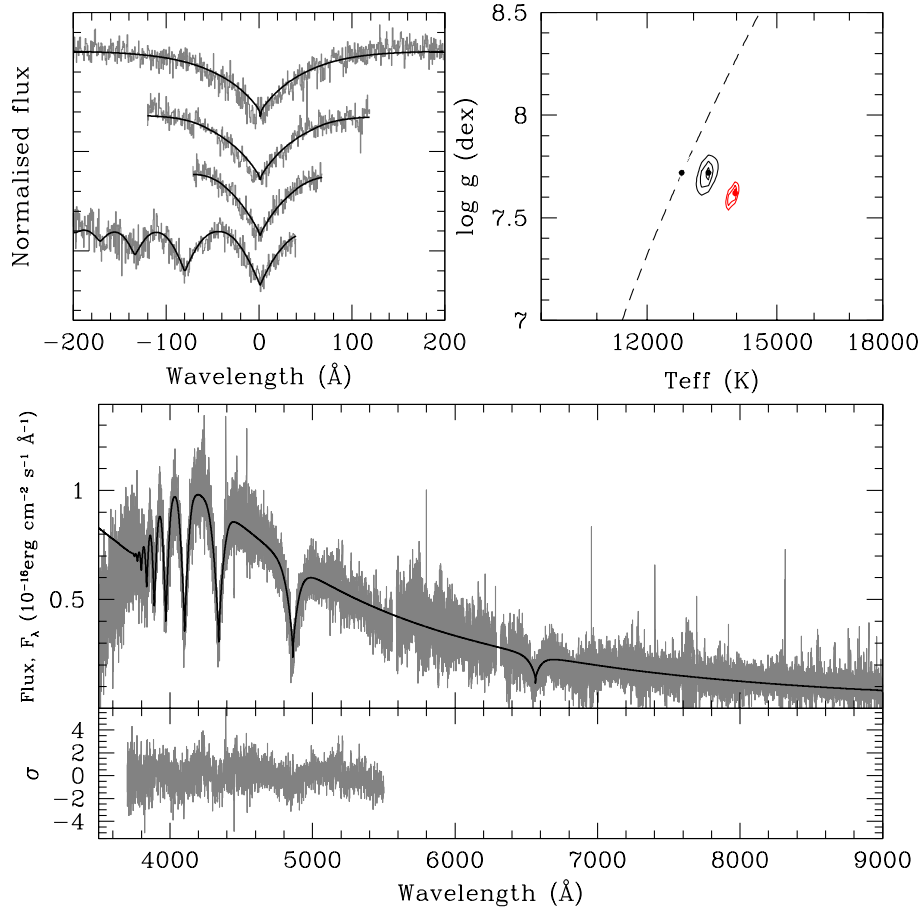


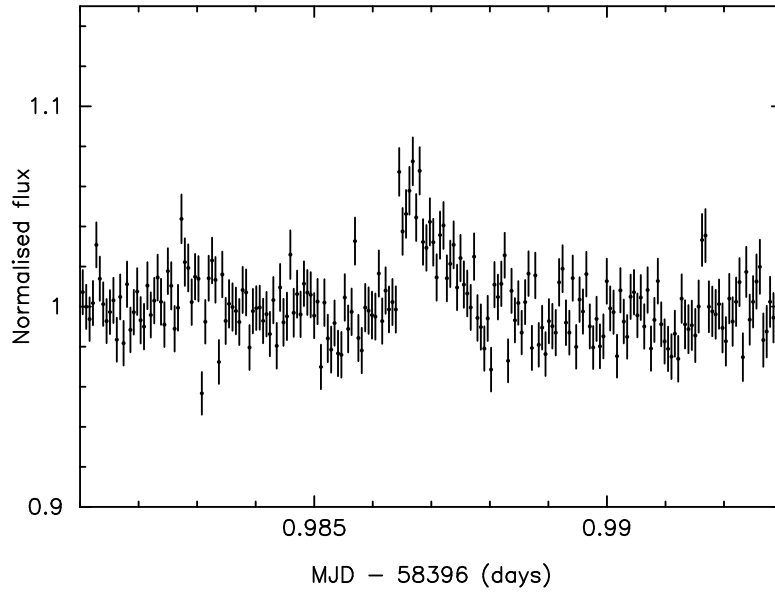
Accurate mass and radius determinations of a cool subdwarf in an eclipsing binary



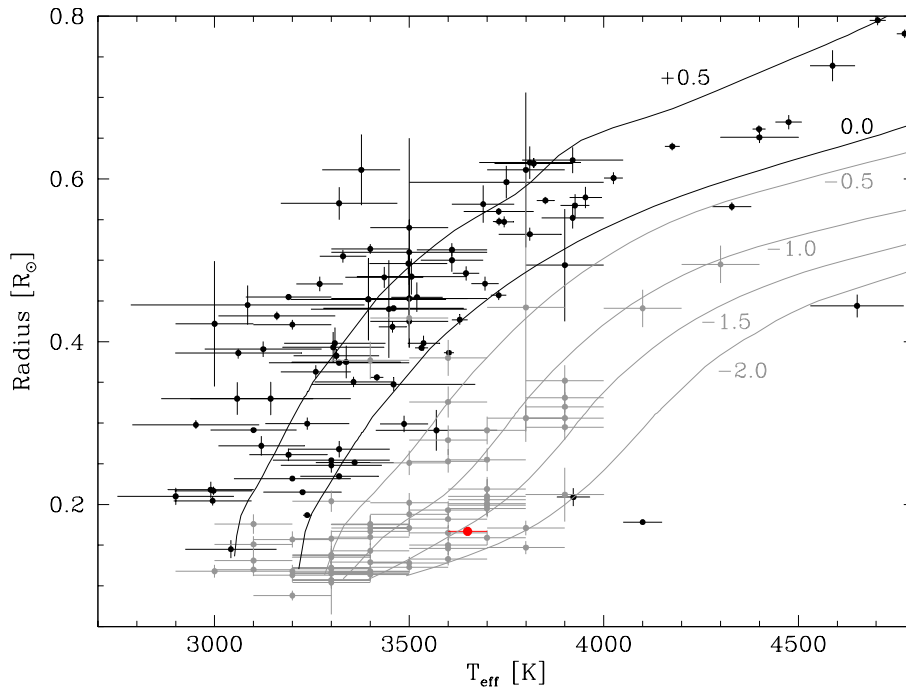
Supplementary Figure 1. Spectral model fits to the residual white dwarf spectrum of SDSS J2355+0448, obtained after subtracting the best-fit cool subdwarf template (Figure 1). Top left panel: from top to bottom the best-fit (black line) to the normalised H β to H10 (gray) line profiles. Top right panel: 3, 5, and 10 σ χ^2 contour plots in the $T_{\text{eff}} - \log g$ plane. Black contours indicate the best line profile fits, whilst red contours the best-fit to the entire spectrum. The maximum H β equivalent width is indicated by a dashed line. Black dots indicate the best “hot” and “cold” line profile solutions, the red dot indicates the best fit to the whole spectrum. Bottom panel: the residual white dwarf spectrum after subtracting the cool subdwarf (gray line) together with the best-fit white dwarf model (black line) and the residuals (gray line, bottom). The fit to the whole spectrum selects the “hot” solution.

Parameter	g_s	r_s	i_s	z_s
WD a_1	0.6882	0.6126	0.5782	0.5530
WD a_2	0.1635	0.0232	-0.1761	-0.3300
WD a_3	-0.4165	-0.1818	0.0999	0.3024
WD a_4	0.1915	0.0823	-0.0386	-0.1209
sd a_1	-0.4633	-0.6869	-0.3228	-0.1407
sd a_2	2.3583	3.9532	2.9078	2.2760
sd a_3	-1.4110	-3.7931	-2.8289	-2.2345
sd a_4	0.1903	1.1713	0.8566	0.6676
sd grav. darkening	1.1211	0.7539	0.6513	0.5731

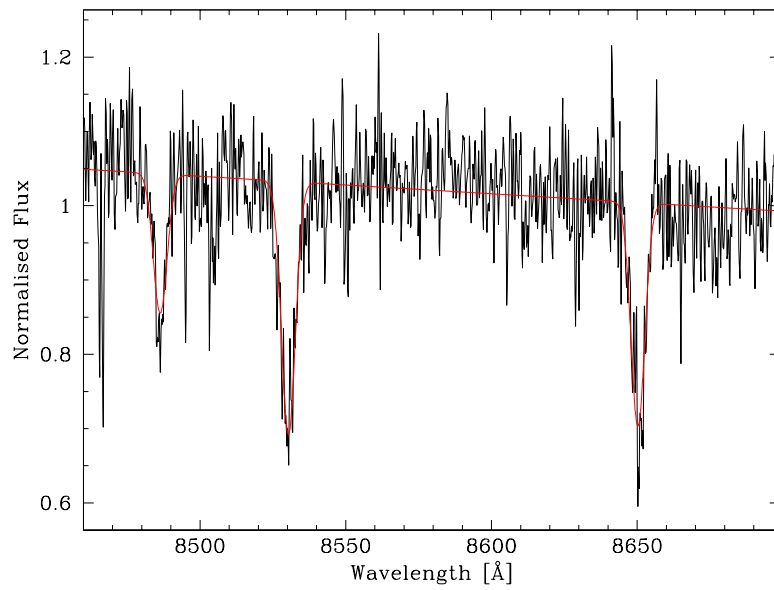
Supplementary Table 1. Limb- and gravity-darkening coefficients used during our light curve fitting for the g_s , r_s , i_s and z_s bands. The white dwarf limb-darkening coefficients (WD a_1 to WD a_4) are for a $T_{\text{eff}} = 13,250$ K, $\log g = 7.75$ dex white dwarf. The cool subdwarf limb-darkening (sd a_1 to sd a_4) and surface gravity (sd grav. darkening) coefficients are for a $T_{\text{eff}} = 3,650$ K, $\log g = 5.0$ dex, $[\text{Fe}/\text{H}] = -2.0$ dex star.



Supplementary Figure 2. g_s -band HiPERCAM light-curve of SDSS J2355+0448 displaying a flare originating in the surface of the cool subdwarf star. The error bars represent $\pm 1\sigma$ uncertainties.



Supplementary Figure 3. Radius-effective temperature plot for a compilation of low-mass solar-metallicity stars (black) and for a compilation of cool subdwarfs (grey). The solid lines are the Dartmouth theoretical tracks for 10 Gyr and the indicated $[\text{Fe}/\text{H}]$ abundances (in dex units). The red solid dot represents the cool subdwarf studied in this work. The error bars represent $\pm 1\sigma$ uncertainties.



Supplementary Figure 4. Fit (red solid line) to the normalised Ca II triplet at $\sim 8500\text{\AA}$ of a X-Shooter spectrum (black solid lines).