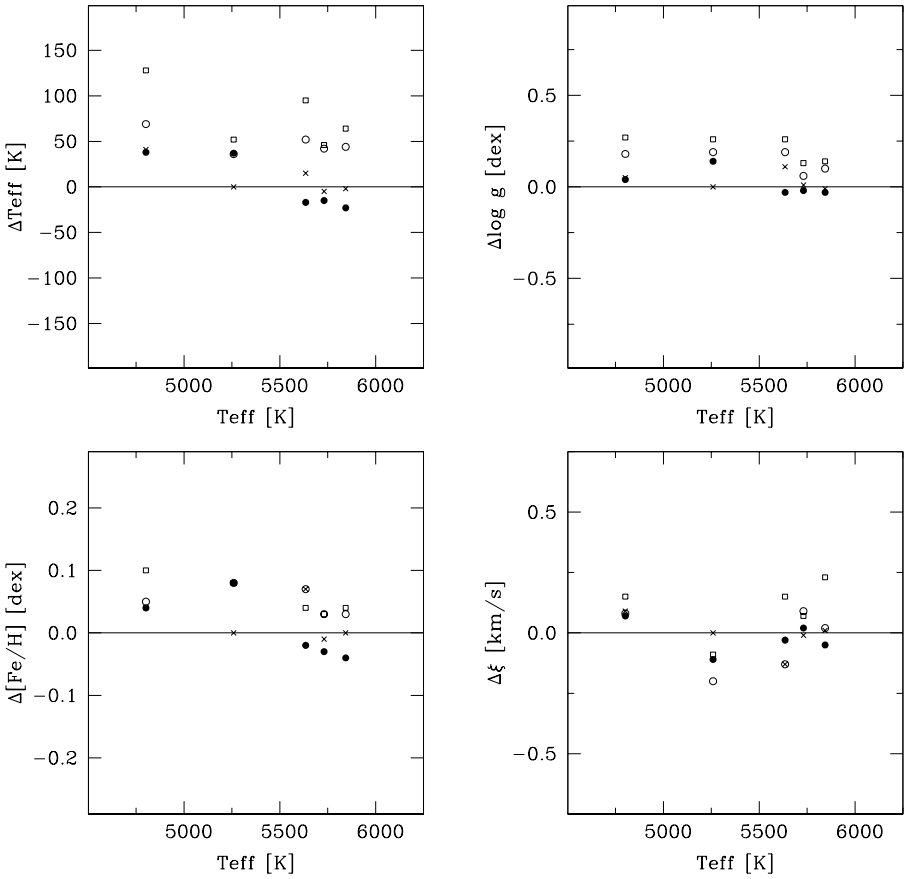

Fig. 1. Difference between the parameters derived in case A and the parameters derived in cases B, C, D and E. The differences are plotted vs. $T_{\rm eff}$ only for 5 stars. For instance, in the $T_{\rm eff}$ panel we ploted $\Delta T_{\rm eff} = T_{\rm eff}({\rm B}) - T_{\rm eff}({\rm A})$ with filled circles. The symbols used in the panels are filled circles (differences B-A), diagonal crosses (differences C-A), empty circles (differences D-A) and squares (differences E-A).

5. UNCERTAINTY ESTIMATION OF THE DERIVED PARAMETERS

The uncertainties in the atmospheric parameters were estimated following Gonzalez & Vanture (1998). The uncertainty in ξ was determined from the standard deviation of the slope of the least-squares fit of abundance vs. reduced equivalent width. Then, the dispersion of the effective temperature was determined from the uncertainty of the slope of the least-squares fit of abundance vs. excitation potential, in addition to the uncertainty of the slope due to the uncertainty of ξ. The uncertainty of the Fe abundance was derived combining the uncertainties of $T_{\rm eff}$, ξ and the scatter of the individual FeI abundances (standard deviation of the mean), all added in quadrature. In calculating the uncertainty of $\log g$, we include the contribution from the uncertainty of $T_{\rm eff}$ in addition to the scatter in the FeII line abundances.

We derive another estimation of the uncertainty of the solution using χ^2. As we explained previously, we select the values of the weights such that solutions with $\chi^2 > 1$ do not verify the four conditions. Then, we adopt the size of the region $\chi^2 = 1$ as another estimation of the uncertainty of the solution. FUNDPAR stores a record of the points with $\chi^2 < 1$ and uses them to estimate the size of the region. The range of the values of $T_{\rm eff}$, $\log g$, [Fe/H] and ξ is shown in the results along with the number n of solutions with $\chi^2 < 1$. These dispersion values should be taken with caution if n is small. This kind of uncertainty is comparable to those derived by the criteria of Gonzalez & Vanture (1998). In the next section we present a histogram comparing both uncertainties for a group of exoplanet host stars. The user is free to select among them, or to take the maximum value, for instance.