DISCUSSION (Holweger)

ABT: I presume that the normal stars you measured have relatively sharp lines because it is too difficult to obtain abundances when the lines are very broad.
HOLWEGER: Yes. The sample comprises all B9.5 - A2 V stars with $v \sin i < 50$ km s^{-1} which are classified as normal in the BSC and which are accessible from ESO in Chile. In the case of the more rapidly rotating λ Boo stars the lines are no longer well separated. Here we have to perform detailed spectrum synthesis.
COWLEY:: Two points. First, the volatility of carbon depends on the C/O ratio. If this is greater than unity, then carbon becomes refractory because the early condensates become carbides rather than oxides. So there may be some environments in which the expected carbon-calcium relationship would be spoiled as a result of carbide formation.

Second, We know very little about the volatility of the trace species such as Sr or Ba because they will probably follow some "carrier". In solution, they follow Ca, but in the gas phase I think we know very little.
MICHAUD: Did you suggest that the [Ca/H] behaved similarly or differently with $\log g$ in the "normal" A and in the Am stars?
HOLWEGER: Both types of stars show about the same increase of [Ca/H] with decreasing $\log g$. However, in λ Boo stars the overall metallicity is reduced, hence the mean value of [Ca/H] is below the mean of the normal stars.
SHORE: First, a comment on dust. If you had PAH's (aromatic hydrocarbons) or fullerenes around an A star, you wouldn't know it. The UV wouldn't excite the near IR continuum. So you could lock up a lot of the carbon in these small grains. But these and other grains have ionization potentials near about 7 ev, so this leads to a question: Is there an upper temperature cut-off to the λ Boo phenomenon? That is, are there B star analogs to these? This could be another way of looking for the "dust signature".
HOLWEGER: The interstellar chemistry of carbon is certainly quite complicated. Probably a significant fraction of carbon is locked up in grains. The carbon anomalies we observe in early A stars including λ Boo stars apparently are not present among much hotter (early B,O) and cooler (late F, G, K) stars.
POLOSUKHINA: On your HR diagram you showed tracks for normal and λ Boo stars. How did you select these objects? What were the criteria? I think the actual difference between normal and λ Boo evolutionary tracks is very small.
HOLWEGER: The normal A stars have been selected from the Bright Star Catalogue, while the λ Boo stars were taken from Gray's (1988) list.
LANZ: Assuming that surface abundances in normal A stars would depend on the dust-to-gas ratio, would you expect any difference in abundance between species with very different depletion to grains?
HOLWEGER: In the dust phase, the relative abundances of the condensed elements will be close to solar, while in the gas phase, elements like Si and Fe will be missing. So if you mix together dust and gas in different proportions during star formation, or later on, you will get a composition which shows an over- or underabundance of the condensable elements ('metals') with respect to hydrogen and relative to the solar ratio.