DISCUSSION (Alecian; Babel)

LYNAS-GRAY: (To Alecian) Your calculation of the radiative acceleration on iron is, in my opinion, a lower limit. The reason I say this is that the Opacity Project has been concerned with convergence over the last six months; by this I mean more and more lines are added until no further increase in opacity is achieved. Among some of the ions with which you are concerned (Fe VII to Fe XII) the number of lines has had to be increased by an order of magnitude. A short supplementary note by Seaton (Rev. Mex. A. A., 23, 180, 1992) in the Caracas workshop proceedings describes this work.
ALECIAN: You are right. Some changes occurred in the Opacity Project data while our work was in progress. We have checked that the new data for Fe XIV lead to an increase of the radiation force by about 17%.
LECKRONE: I am concerned that some of the diffusion calculations are very sensitive to wind velocity, and yet the velocities are so low that they may not be directly measureable, at least for the hotter, non-magnetic Bp stars (e.g., HgMn stars). The mechanism producing any winds is probably only radiation pressure. The Munich group has had much success with applications of the theory of radiatively driven winds. Have you attempted to apply similar computations to HgMn stars to calculate expected wind velocities? This surely would be preferable to treating wind velocity as a free parameter.
ALECIAN: I have not attempted to calculate the wind velocity. However, this might be considered in the future when the atomic data bank will be available. Or another way; to try to reproduce the abundance pattern in Am stars seems to be an interesting method for an indirect determination of the wind velocity.
ABT: (To Babel) I recall that about 20-25 years ago Hesser and Henry made photoelectric measurements of the K line strengths in many hundreds of stars. Some of us could perhaps make good use now of those data.
BABEL: I don't think that the K line photometry can be used directly to obtain reliable information, but it could be a good selection criterion for further spectroscopic studies.
COWLEY: First just a comment on Dr Babel's paper: the explanation of the sharp Ca II cores are very encouraging. We have seen these things for a long time and didn't understand them. Now could I ask any of the speakers, perhaps Dr Alecian: What is the current status for the support of iron in these stars? The old 1976 calculations always showed that even a solar abundance of iron could not be supported. Has that problem now been resolved?
ALECIAN: It is not possible to answer this question at present because not all the data for iron is available. As soon as the atomic data becomes accessible, it will be possible to make extensive computations for all ions and all elements. The situation will then be clearer.
DEMIRCAN: (To Babel) There are some new evidences from the evolutionary states of the components of well detached binaries that the mass loss rate due to stellar winds on the main sequence could be as large as $10^{-11}\ M_{\odot}\ \mathrm{yr}^{-1}$, and this value is probably valid for single stars. Thus, such large mass loss rates would be more appropriate in the diffusion theory of Ap stars.
BABEL: It has been shown several times that such mass loss rates are incompatible with any abundance anomalies.

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