NLTE line blanketed model atmospheres for sdO stars

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SDSS J1600+0748 is the only sdO known so far to exhibit multiperiodic pulsations. Because this star is likely to contain its fair share of metals (currently in unknown abundances and proportions), we felt that it was important to assess the role of such metals on its derived atmospheric parameters. With this idea in mind, we have started the construction of grids of non-LTE line blanketed model atmospheres suitable for the analysis of SDSS J1600+0748. A progres report has been presented at the last sdOB meeting held in Shanghai(2009). Since then our grids have been completed, and here we present the results of our complete study. Our grids cover an intermediate range of effective temperature for sdO stars (from 60 000 K to 80 000 K in steps of 2 000 K) and log g between 4.8 and 6.4 in steps of 0.2 dex. They also cover a range of log N(He)/N(H) between 0.0 and -4.0 in steps of 0.5 dex. While the physics of NLTE atmospheres for sdO stars has been pioneered by Prof. Klaus Werner and his associates, such large grids of models have remained unavailable for quantitative spectroscopic analyses of this category of hot stars. This is because, until recently, they could not be practically computed over reasonable timescales. We solved the problem by adapting TLUSTY and SYNSPEC to run in parallel mode on a small dedicated cluster of 80 fast processors. We compare three different NLTE grids including : (1) H, He, (2) H, He + C, N, O (solar), and (3) H, He, C, N, O + Fe (solar). By fitting synthetic spectra from a given grid with another one, we can obtain "maps" showing the line-blanketing effects of metals, i.e., the differences between the real atmospheric parameters ($T_{\rm eff}$ and log g) and the ones inferred by the fitting procedure using the grid with no metals included. Finally, we will present the results of the spectral analysis of SDSS J1600+0748, using our differents grids of NLTE model atmospheres and synthetic spectra.