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The new grid of CO5BOLD 3D hydrodynamical red giant model atmospheres and its application to globular cluster abundance estimates

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To interpret stellar spectra 1D hydrostatic model atmospheres are most often used as a compromise between accuracy and computational cost. However, such models do not treat convection accurately and rely on approximating it with varying degrees of success. We present a new grid of 3D hydrodynamic CO5BOLD model atmospheres and use it with 3D non-equilibrium radiative transfer code MULTI3D to investigate whether accurate treatment of both hydrodynamics and radiative transfer can explain anomalies in abundance estimates in red giants of globular clusters for Mg and Al spectral lines, which were obtained with simpler 1D hydrostatic model atmospheres assuming local thermodynamic equilibrium.

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