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A grid of NLTE corrections for magnesium and calcium in late-type giant and supergiant stars: application to Gaia

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We investigate NLTE effects for magnesium and calcium in the atmospheres of late-type giant and supergiant stars. The aim of this paper is to provide a grid of NLTE/LTE equivalent width ratios W/W* of Mg and Ca lines for the following range of stellar parameters: Teff in [3500, 5250] K, log g in [0.5, 2.0] dex and [Fe/H] in [-4.0, 0.5] dex. We use realistic model atoms with the best physics available and taking into account the fine structure. The Mg and Ca lines of interest are in optical and near IR ranges. A special interest concerns the lines in the Gaia spectrograph (RVS) wavelength domain [8470, 8740] A. The NLTE corrections are provided as function of stellar parameters in an electronic table as well as in a polynomial form for the Gaia/RVS lines.

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