# Spectral link for the mean velocity profile in the atmospheric boundary layer

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Turbulent flow in the atmospheric boundary layer is sheared and stratified. For this flow, we consider the mean velocity profile (MVP), the vertical profile of the time-averaged horizontal wind velocity. We employ the theoretical framework of the spectral link, originally proposed for MVP in sheared flows (Gioia et al., 2010) and later extended to stratified flows (Katul et al., 2011). Accounting for the whole structure of the turbulent energy spectrum—the energetic range, the inertial range, and the dissipative range—we examine the scaling of the MVP in the "wall coordinates" and in the Monin–Obukhov similarity coordinates, for both stable and unstable stratification. Our results are in excellent accord with field measurements and numerical simulations.