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Stars in various parts of the HR diagram often have atmospheres in which the departure from the simplest kind of plane-parallel model is largely dominated by a single physical effect. For example, massive stars and giants exhibit symptoms of strong winds, and lower main sequence stars are very strongly influenced by the presence of deep and energetic envelope convection. Main sequence A stars, in contrast, appear to display the competing effects of several physical effects of comparable magnitude. The effects which can be detected by observation include large and relatively simple magnetic fields, strong surface convection, pulsation (often in multiple modes), diffusion of specific species under the competing influences of gravity and radiative acceleration, and (more indirectly) internal turbulent mixing, weak winds, and non-thermal heating. This situation makes these stars extremely useful as laboratories to explore and understand the physics of these various phenomena, and how these effects interact with each other. This review will summarize some of the interconnections that are gradually being understood, and emphasize some of the major remaining problems.
