

# Upper limits to ultraviolet line emission in fully convective M-dwarfs

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Theoretical stellar structure models find that stars later than  $\delta$ DM3 are fully convective. It is widely believed that this should result in reduced non-radiative heating and activity levels, however, the observational evidence is sparse and somewhat contradictory. In order to expand the number of atmospheric diagnostics for these stars, we have obtained deep short wavelength (SWP) IUE spectra of 5 M dwarfs later than spectral type dM5. Exposure times ranged from 4 to 7 hours. Only upper limits were measured for chromospheric and transition region lines, thus appearing to rule out enhanced line emission activity. The fractional luminosities of C IV ( $\lambda$ 1550), C II ( $\lambda$ 1335), and C I ( $\lambda$ 1657) relative to  $L_{bol}$  indicate that emission lines in the temperature range 6000 K to  $\sim 1 \times 10^5$  K are up to an order of magnitude weaker than in earlier M dwarfs having radiative cores. The lower limits on line fluxes for Barnard's star are significantly below those of the other stars in the program.

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