VISIBLE OPACITY OF M DWARFS AND HOT JUPITERS: THE TiO $B^3\Pi$- $X^3\Delta$ BAND SYSTEM

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The TiO $B^3\Pi$- $X^3\Delta$ electronic transition (γ' system) is an important opacity source in the atmospheres of M dwarfs and hot Jupiter exoplanets. The 0–0, 1–0, and 2–1 bands of the $B^3\Pi$- $X^3\Delta$ band system have been analyzed using a TiO emission spectrum recorded at the McMath-Pierce Solar Telescope, operated by the National Solar Observatory at Kitt Peak, Arizona. Improved spectroscopic and equilibrium constants were determined. Line strengths were calculated from an *ab initio* transition dipole moment function scaled using an experimental lifetime. A new line list for v' = 0-2 and v''= 0-4 of the $B^3\Pi$- $X^3\Delta$ band system is provided.