OPTICAL ZEEMAN SPECTROSCOPY OF THE $X^3\Delta$, $A^3\Phi$ AND $B^3\Pi$ STATES OF TITANIUM MONOXIDE, TiO

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Optical Zeeman spectroscopy has been performed on transitions between the ground and low-lying excited states of TiO. There is significant astrophysical interest in the visible and near infrared bands of TiO, which dominate the spectra of cool stars. Accurate measurement of the tuning rate for spectral features of TiO is required to deduce stellar ambient magnetic fields. Magnetic tuning rates for the visible and near infrared transitions have been recorded, and the extracted Lande g-factors have been used to analyze the structure of the electronic states. Interpretation of the g-factors provides a quantitative measure of the mixing between excited states and comparison has been made to calculations predicting the electronic spectra.