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Visible to near infrared emission spectra of electron-excited \mathbf{H}_2^1 A. AGUILAR, G.K. JAMES, J.M. AJELLO, Jet Propulsion Laboratory, Pasadena, CA, H. ABGRALL, E. ROUEFF, LUTH and UMR 8102 du CNRS, Observatoire de Paris, France — \mathbf{H}_2 is the most abundant molecule in the universe and is an active component of star formation. Intense \mathbf{H}_2 transitions in the visible optical near Infrared (VOIR) spectral region from various vibrational levels have been observed in highly-collimated jets of matter from young stellar objects [1]. In recent work, we have demonstrated [2] that the gerade series (EF, GK, $\mathbf{H}^1\Sigma_g^+$, $\mathbf{I}^1\Pi_g$, $\mathbf{J}^1\Delta_g$...) makes a significant contribution to the UV spectrum of \mathbf{H}_2 via its cascade spectrum in the VOIR to the $n=2p\sigma\mathbf{B}$ and $2p\pi\mathbf{C}$ states, the upper states of the Lyman and Werner bands, respectively. We present the measured electron-impact-induced emission spectrum of \mathbf{H}_2 in the VOIR region 700 nm to 950 nm at a spectral resolution of 2 nm (FWHM). A model spectrum of \mathbf{H}_2 including rovibrational coupling for the strongest band systems is in excellent agreement with observed intensities.

- [1] Nisini et al., A&A, 441, 159-170, (2005)
- [2] Liu et al., Astrophys. J. Suppl., 138, 229(2002) and J. Phys. B, 36, 173(2003).

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