We present the first detailed analysis of the Tetradecad region of methane $^{12}\text{CH}_4$ from 2.1 to 1.6 $\mu$m (4800 to 6250 cm$^{-1}$). New high resolution FTIR spectra measured in a collisional cooling cell at 80 K and at room temperature have allowed us to perform many new assignments. All assigned lines of $^{12}\text{CH}_4$ in the 0–6200 cm$^{-1}$ region have been included in a global fit, extending our previous analysis covering all levels up to and including the Octad (i.e. up to 4800 cm$^{-1}$). In the end, 3012 line positions and 1387 intensities of 45 individual subbands were modeled up to $J = 14$. The root mean square deviations were 0.023 cm$^{-1}$ for line positions and 13.86 % for line intensities in the Tetradecad region itself. Although this study is still preliminary, it is already sufficient to characterize the stronger bands throughout the whole of the Tetradecad polyad. The analysis and present success substantially improves our understanding of the methane spectra needed to interpret planetary atmospheres.

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