



Figure 4. Experimental comb-line-resolved dual-comb spectra of the 3-0 band in CO at 1-GHz resolution. (a) Unapodized spectrum with 400 comb lines, spanning 0.4 THz, with the strong $P(21)$ and $P(20)$ absorption lines of $^{12}\text{C}^{16}\text{O}$. (b) The $P(20)$ line sampled by the individual comb lines. (c) Spectrum measured within only 5 μs . (d) Spectrum measured within 1 ms, showing the $P(21)$ line $^{12}\text{C}^{16}\text{O}$ and the $R(11)$ line in $^{13}\text{C}^{16}\text{O}$, for the determination of the $^{13}\text{CO}/^{12}\text{CO}$ isotopologue ratio. (e) Transmittance and (f) dispersion experimental spectra in the region of the $P(22)$ - $P(19)$ lines of $^{12}\text{C}^{16}\text{O}$ and comparison with spectra calculated from the HITRAN database. Three spectra, each spanning 0.28 THz and measured within 200 μs are stitched. The weak lines are assigned to the $R(9)$ - $R(15)$ lines in ^{13}CO .