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Title:Absolute frequency list of the v3-band transitions of methane at a relative uncertainty level of 10-11
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Abstract:We determine the absolute frequencies of 56 rotationvibration transitions of the v3 band of CH4 from 88.2 to 90.5 THz with a typical uncertainty of 2 kHz corresponding to a relative uncertainty of 2.2×10-11 over an average time of a few hundred seconds. Saturated absorption lines are observed using a difference-frequency-generation source and a cavity-enhanced absorption cell, and the transition frequencies are measured with a fiber-laser-based optical frequency comb referenced to a rubidium atomic clock linked to the international atomic time. The determined value of the P(7) F2(2) line is consistent with the International Committee for Weights and Measures recommendation within the uncertainty.
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