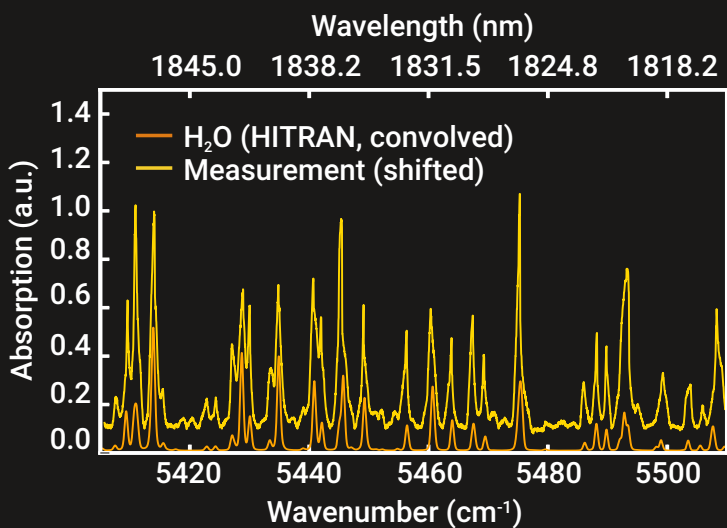
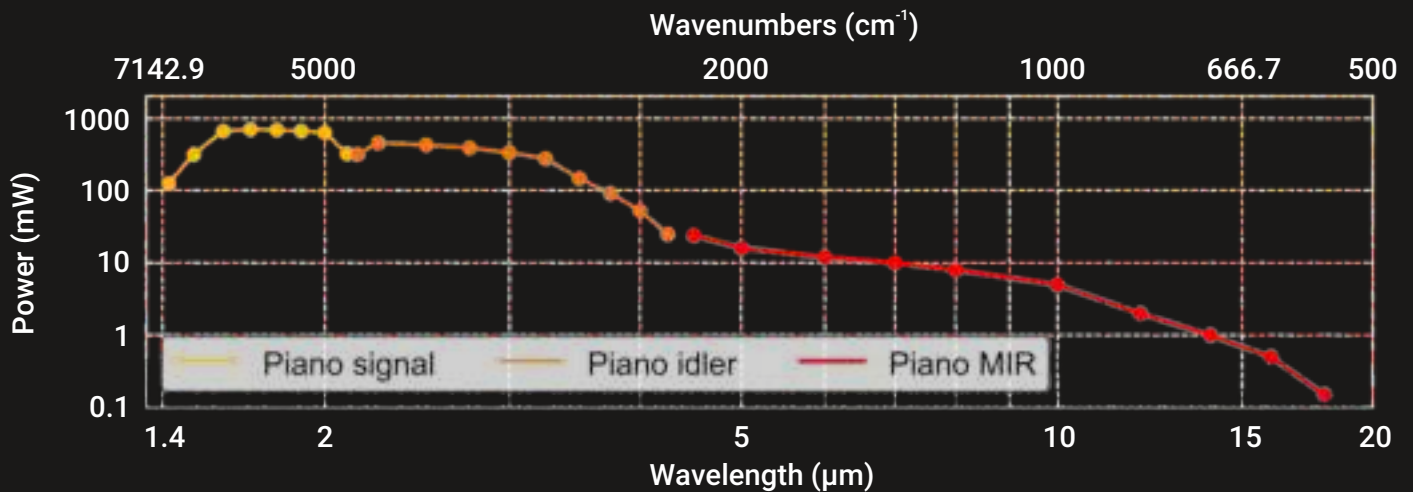
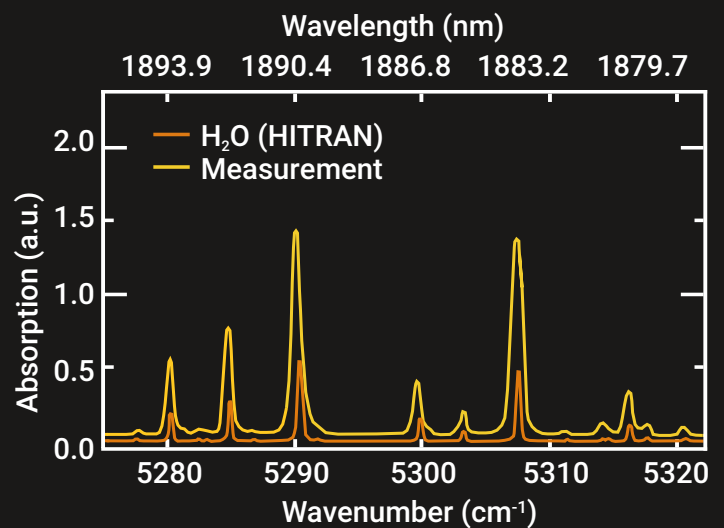


Piano

The Stuttgart Instruments Piano is an ultra compact and rapidly tunable and sweepable, narrowband laser, designed for imaging applications and IR spectroscopy in industry and research. Within the spectral range from 2220 - 7145 cm^{-1} (1.4 - 4.5 μm) nearly 1 W average output power is provided; within the MIR range from 555 - 2220 cm^{-1} (4.5 - 18 μm) several mW. The SI Piano is integrated into a solid water-cooled CNC-cut housing. It is characterized by its outstanding spectral accuracy and unprecedented reproducibility. The output can be swept at $\sim 100 \text{ cm}^{-1}/\text{s}$ with a tuning setting time of $\sim 1 \text{ ms}$. Random wavelengths are accessible within $\sim 5 \text{ s}$. Sweeping over the 1000 - 2000 cm^{-1} (5 - 10 μm) range requires $\sim 5 \text{ s}$.



Atmospheric absorption analysis using IR transmission spectroscopy. This spectrum was acquired in 1s with 2 cm^{-1} resolution.



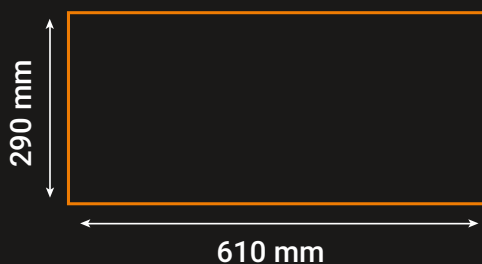
High resolution (1 cm^{-1}) and high sensitivity photoacoustic measurement of atmospheric water vapor resonances (yellow). HITRAN database reference spectrum (orange).

Piano

Specifications	
Tuning range	2220 - 7145 cm^{-1} (1.4 - 4.5 μm)
with MIR	555 - 2220 cm^{-1} (4.5 - 18 μm)
Typical output power	
at 1600 nm (6250 cm^{-1})	~ 800 mW
at 10 μm (1000 cm^{-1})	~ 5 mW
Bandwidth (FWHM)	< 4 cm^{-1}
Pulse duration	< 10 ps
Repetition rate (typical)	~ 50 MHz
Beam pointing	< 10 μrad
Beam quality M^2	< 1.5
Sweeping speed	~ 100 cm^{-1}/s
Tuning settling time	~ 1 ms



Footprint



standard IR output
2220 - 7145 cm^{-1}
(1.4 - 4.5 μm)

optional MIR
555 - 2220 cm^{-1}
(4.5 - 18 μm)