Hyperdog: Planetary sniffer


Ultrtrace gas detection requires long folded path

Passive cavity: Effective pathlength <100m

Ultra long path impossible due to reflection losses

\[ R = 97\% \quad R = 98\% \quad R = 99\% \]

Active cavity can achieve Effective Pathlength >1m

Spherical mirror

Detector

HR mirror

Source

HR mirror

Spherical mirror

To Spectrometer

8.1 µm QCL

From Laser

4.1 Torr

4 x 10^3 Torr

Intensity (arb. units)

500 1000 1500 2000 2500 3000 3500 4000
Wavelength (micron)

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